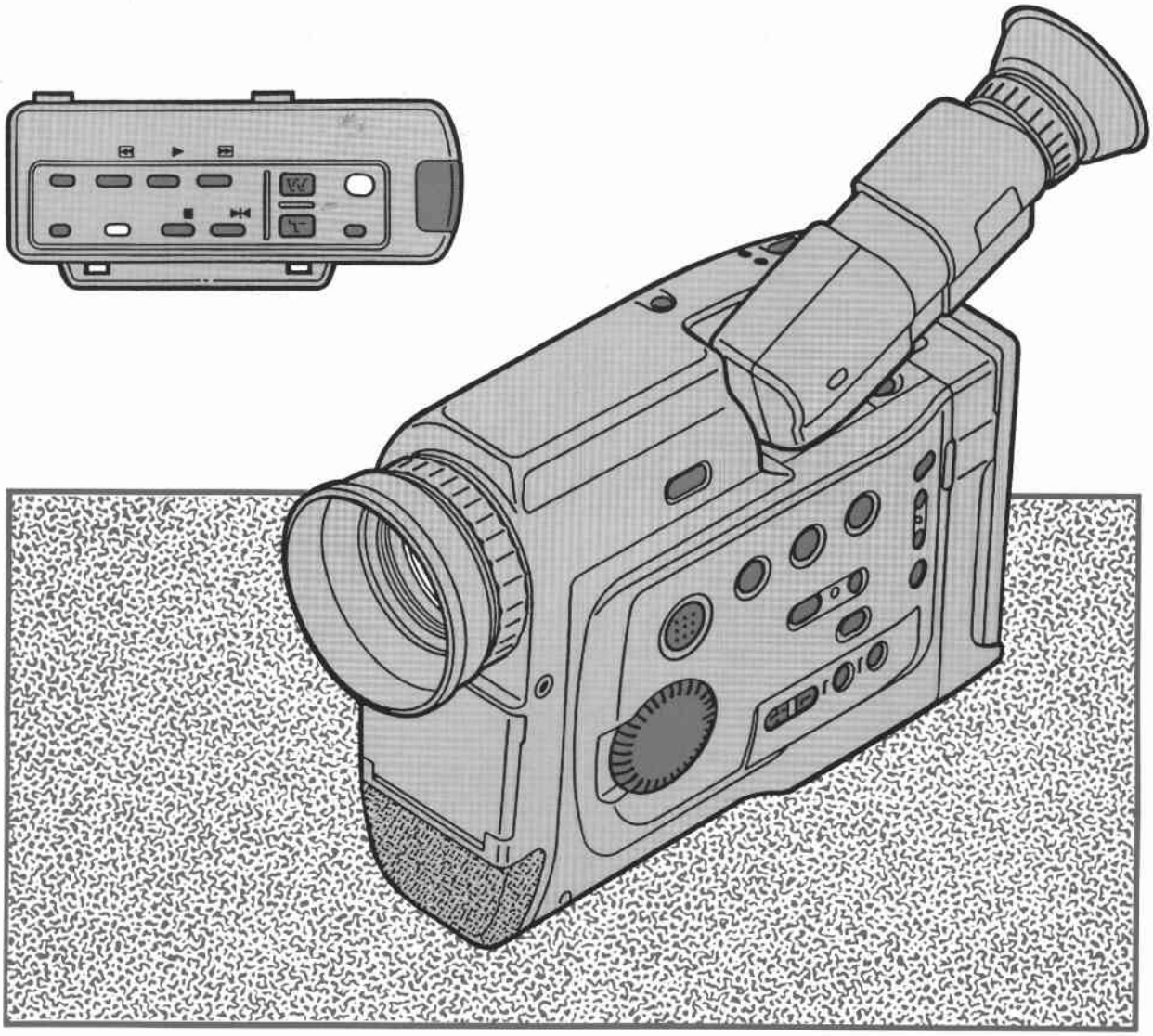
Hi 8

Canon UC1 Hi

8mm VIDEO CAMCORDER

Instruction Manual



E INSTRUCTIONS

Thank you for purchasing the Canon 8mm Video Camcorder UC1Hi. This camera can be used for both recording and playback of video cassettes in 8mm format.

- Please use only video cassettes bearing the Hi8 mark (E5/P5 types) or 8 mark (P5 type) with this camera.
- With the UC1Hi, stereo recording is possible. However, tapes recorded in stereo will play back on monaural 8mm VTRs in monaural.

■ Please check that this package contains the following items:

UC1Hi

- Lens Cap and Lens Cap Cord
- Lens Hood
- WL-1 Wireless Controller
- Two R03/AAA Batteries
- S-150 S-Video Cable
- DC-100 DC Coupler
- BP-E77K Battery Pack
- CA-100 Compact Power Adapter
- SS-200 Shoulder Strap
- P5-30 HMP 8mm Video Cassette

The connecting accessories included in the kit vary according to areas. Use the following chart to determine what your kit should contain:

	EUROPE, etc.	UK, etc.	ASIA, OCEANIA, LATIN AMERICA, etc.
RU-100 RF Unit	—	1	—
ST-150 Stereo Cable	—	1	1
C-150 AV Cable	—	—	1
PC-170ST Stereo SCART Cable	1	—	—

■ Optional Accessories

BP-E722 Battery Pack
BP-E722D Battery Pack
BT-U1 Battery Case
CB-110 Car Battery Adapter
MC-100 Multi-battery Charger
HC-U1 System Case
SC-U1 Soft Carrying Case
VK-U1 Video Backpack
SK-U1 Sports Pack
SJ-U1 Soft Video Jacket
RS-U1 Rain Shield
TL-37 Tele-converter
WD-37 Wide-converter
FS-37 Filter Set
FS-37U Filter Set
MM-200 Stereo Mixing Microphone
ZM-100 Stereo/Zoom Microphone
WS-20 Wrist Strap
VL-20 Battery Video Light
ZR-100 Zoom Remote Controller
VE-100 Video Editor
SA-1 Adapter Bracket
PC-150 SCART Cable
PC-270SST S-stereo SCART cable

Important Usage Instructions

CAUTION:
TO REDUCE THE RISK OF ELECTRIC SHOCK, DO NOT REMOVE COVER (OR BACK). NO USER SERVICEABLE PARTS INSIDE. REFER SERVICING TO QUALIFIED SERVICE PERSONNEL.

WARNING:
TO REDUCE THE RISK OF FIRE OR ELECTRIC SHOCK, DO NOT EXPOSE THIS PRODUCT TO RAIN OR MOISTURE.

CAUTION:
TO REDUCE THE RISK OF ELECTRIC SHOCK AND TO REDUCE ANNOYING INTERFERENCE, USE THE RECOMMENDED ACCESSORIES ONLY.

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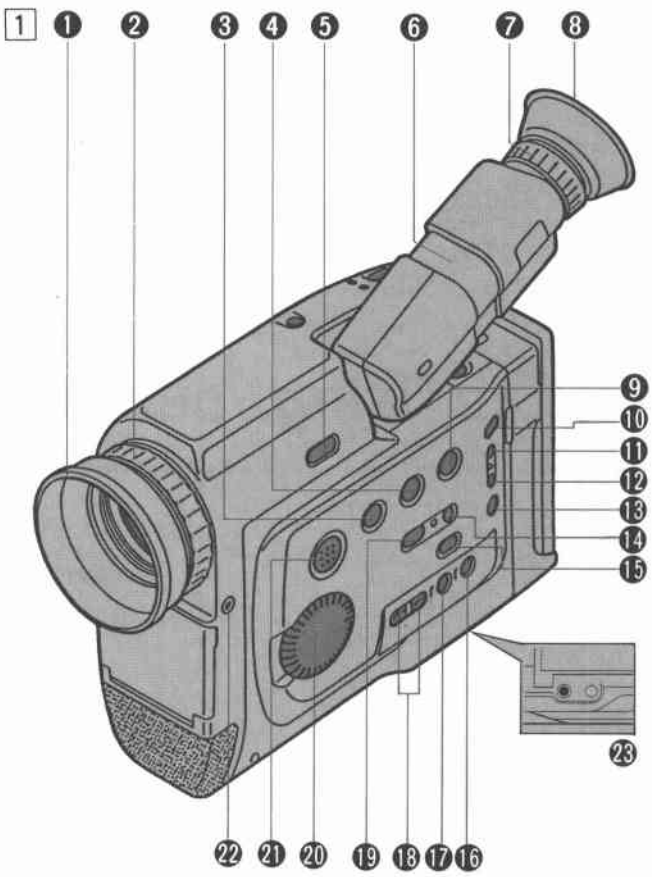
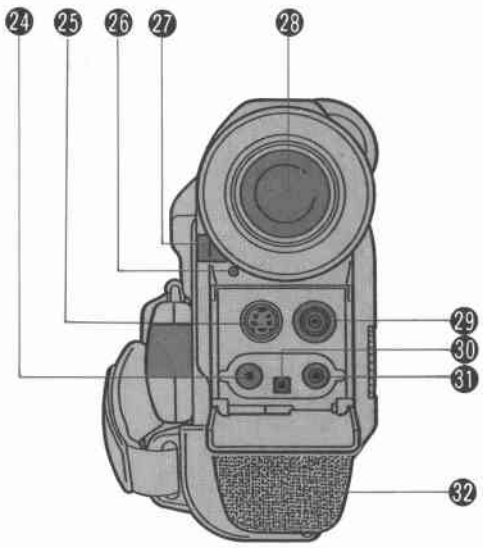
Before Using Your Camera

Nomenclature

Right View [1]

❶ Lens Hood
❷ Focusing Ring
❸ C. (Character) TITLE Button
◀◀ (Rewind) Button
❹ DATE Button
▶▶ (Fast Forward) Button
❺ AF ON/OFF Button
❻ Finder
❼ Diopter Adjustment Ring
❽ Eyecup
❾ DISPLAY (Digital Title) Button
▶|◀ (Still) Button
❿ MENU Button
⓫ REC SEARCH/+ (Forward) Button
⓬ REC SEARCH/– (Backward) Button
⓭ SELECT Button/ ⮌ (Record Review) Button
⓮ MODE/COLOR (Digital Title) Button
⓯ C. (Counter) RESET Button
⓰ SHUTTER Button
⓱ W. BAL (White Balance) Set Button
⓲ EXP (Exposure) CONTROL Buttons (+/–)
⓳ MEMO (Memory) (Digital Title) Button
■ (Stop) Button
⓴ PROGRAM AE Selector
㉑ FADE Button
▶ (Play) Button
㉒ MIC (Microphone) Terminal
㉓ Tripod Socket
㉔ Video Terminal
㉕ S-video Terminal
㉖ Tally Lamp
㉗ Remote Sensor
㉘ Lens
㉙ Audio Ⓡ (Right) Terminal
㉚ DC Output Terminal
㉛ Audio Ⓛ (Left) Terminal
㉜ Stereo Microphone





Tally Lamp

The tally lamp performs the following functions:

•Recording	Flashes rapidly
•Self-timer standby	Flashes slowly
•Self-timer recording	Flashes rapidly
•Wireless controller operation	Lights up

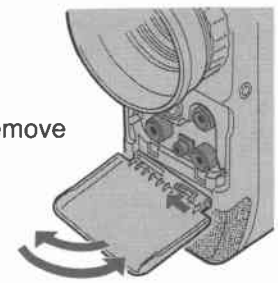
•When TALLY is selected from MENU 4 (CAMERA mode), the tally lamp will not flash.
However, it will light up during wireless controller operation.

Left View 2

- ㉝ **Viewfinder**
- ㉞ **Finder RELEASE Switch**
- ㉟ **MODE SELECT Button**
- ㊱ **CAMERA Indicator (Red)**
- ㊲ **EDIT ERASE/BLANK TAPE SEARCH Button**
- ㊳ **PLAY Indicator (Green)**
- ㊴ **HEADPHONES Terminal**
- ㊵ **LANC REMOTE Terminal (Remote Control Terminal for Editing)**
- ㊶ **Wireless Controller**
- ㊷ **Wireless Controller Attachment Clips**
- ㊸ **Grip Belt**
- ㊹ **Video Cassette Compartment Cover UNLOCK Switch**
- ㊺ **Start/Stop Button**
- ㊻ **Strap Attachment Bars**
- ㊼ **Power Source Compartment**
- ㊽ **BATT (Battery) EJECT Lever**
- ㊾ **OPERATE Button**
- ㊿ **Start/Stop Button**
- (51) **Power Zoom Buttons (T: Telephoto/W: Wide angle)**
- (52) **Video Cassette Compartment**
- (53) **EJECT Button**
- (54) **Video Cassette Compartment Cover**
- (55) **Stabilizer**
  Pull out to stabilize camera when using it in position shown.
  * Push back when not using.

Removing and Attaching Audio/Video Compartment Cover

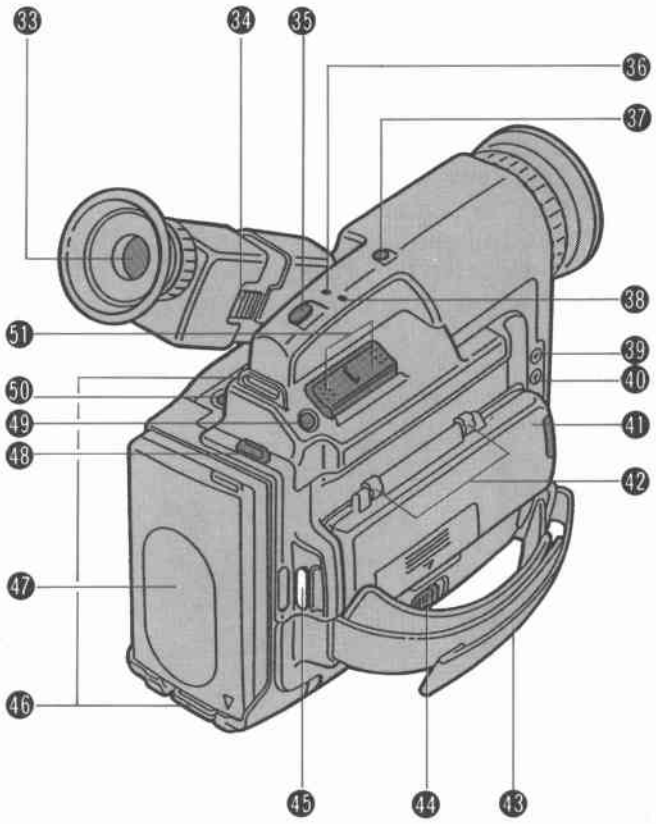
Slide lever in direction of arrow and remove/attach as shown.

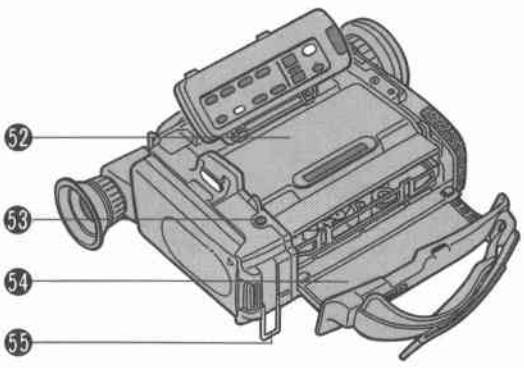


To remove

To attach

2

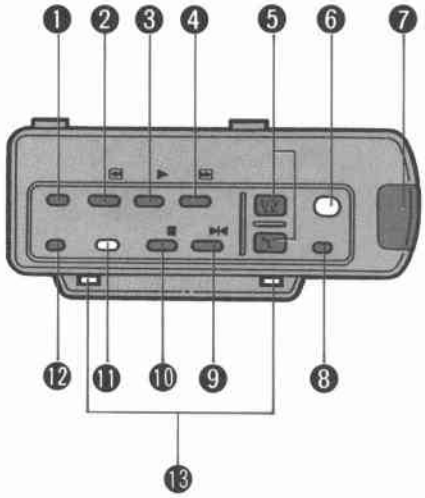




Wireless Controller

Removed from the camera, the detachable wireless controller can be used to operate the camera from a distance.

❶ **TAPE RETURN Button**
❷ **REW/ ⏪ Button**
❸ **PLAY ▶ Button**
❹ **FF/ ⏩ Button**
❺ **ZOOM Buttons**
❻ **START/STOP Button**
❼ **Transmitter**
❽ **ON SCREEN Button**
❾ **STILL ▶⏸ Button**
❿ **STOP ■ Button**
⓫ **REC Button**
⓬ **C. (Counter) RESET Button**
⓭ **Attachment Bars**



Removing and Attaching Wireless Controller

Attached to the camera, the detachable wireless controller forms a comfortable grip when shooting and can be flipped up for easy playback control on a connected monitor.

To remove: [1]

1. **Place camera so that the attached wireless controller is on top, then lift up wireless controller.**
   - Make sure video cassette compartment is closed.
2. **Move wireless controller attachment bars toward gaps in clips and remove from camera.**

To attach: [2]

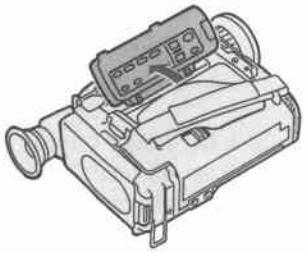
1. **Insert bars on wireless controller into clips on camera.**
   - Make sure video cassette compartment is closed.
2. **Press wireless controller down until it clicks and attaches securely to video cassette compartment cover.**

Note:

- Do not use excessive strength when attaching and removing the wireless controller. This may result in damage to the clips and bars.

[1]

1



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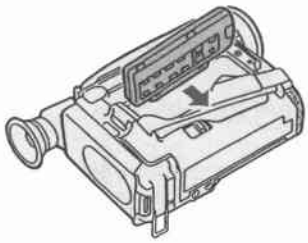
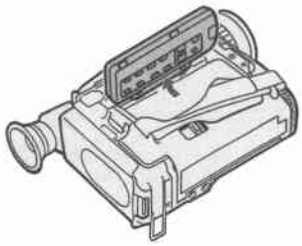


[2]

1



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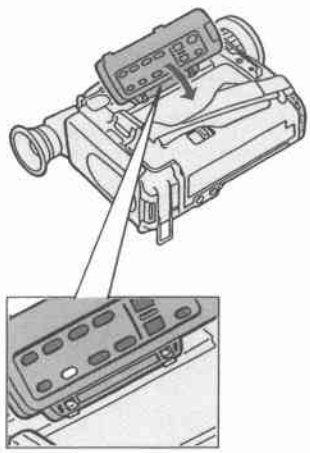


Operation

Attached to camera [1]

Place camera as shown.
Lift up wireless controller and press operating buttons.

The wireless controller operates the camera by emitting infrared signals reflected by surrounding surfaces. The tally lamp lights up when the remote sensor receives the wireless controller's signals.

The camera cannot receive the signals from the wireless controller if there is no reflecting surface within approximately 3 metres in front of camera.

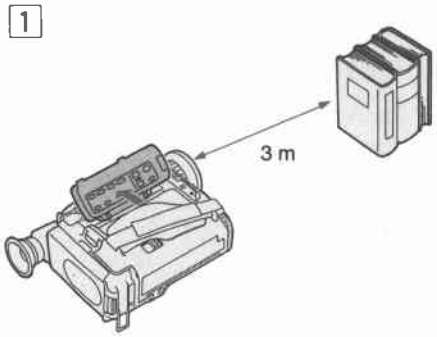
Removed from camera [2]

Use the wireless controller from a position inside the area shown in the illustration and within 5 metres of camera.

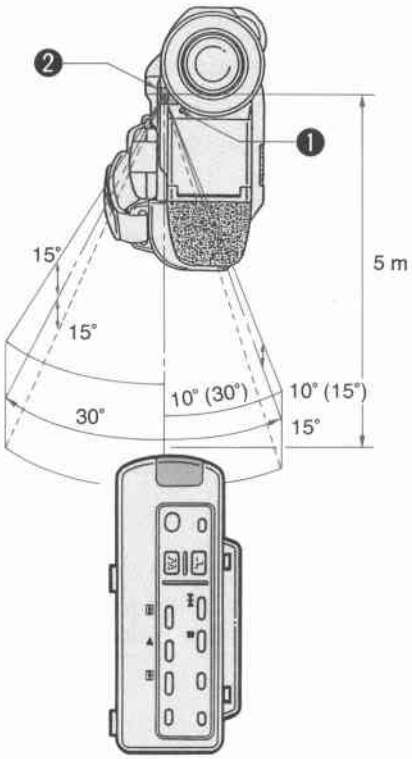
- Angles given in parentheses are for use with lens hood removed.

❶ **Tally Lamp**
❷ **Remote Sensor**

[1]



[2]



Inserting batteries [3]

The wireless controller operates on two R03/AAA batteries.

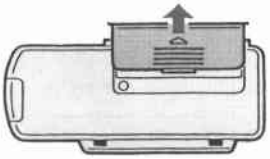
1. **Press down on battery compartment cover and slide off in direction of arrow.**
2. **Insert two R03/AAA batteries, checking the polarity (⊕ and ⊖). Be careful not to reverse polarity of batteries.**
3. **Replace cover following guide grooves.**

Notes:

- Do not leave the wireless controller:
  1 Exposed to direct sunlight
  2 Near a heater
  3 In a hot or humid place
- The wireless controller uses an infrared beam to transmit signals, so sunlight or fluorescent light may shorten the operating distance. The camera may also have some difficulty in detecting the signal if the wireless controller is used at extremely close range.
- The wireless controller will not operate if SENSOR has been selected (see p. 92).
- The wireless controller does not operate when the RS-U1 Rain Shield is attached to the camera.
- When changing exhausted batteries, replace all batteries at once.

[3]

1



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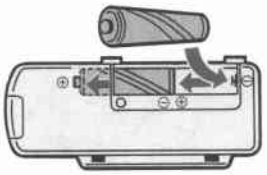

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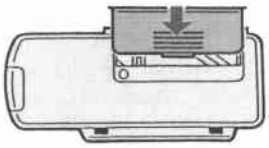
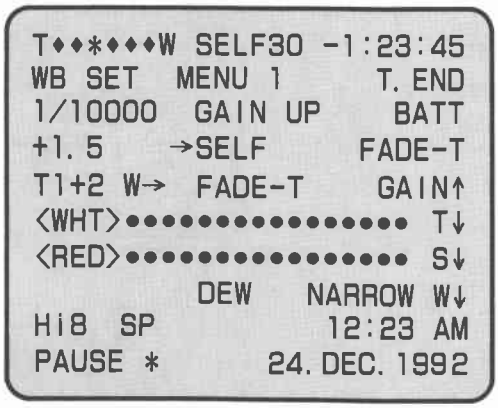


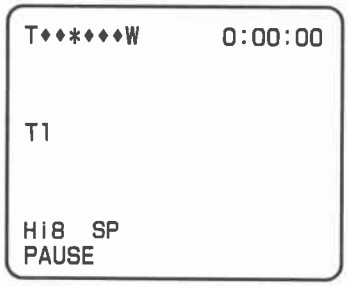
Viewfinder Displays

Press the ON SCREEN button on the wireless controller to see the viewfinder displays on a connected TV screen. Press the ON SCREEN button again to cancel the display.
•Only titles, date and time are recorded with the scenes.

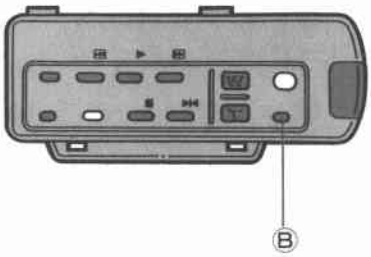
Ⓐ



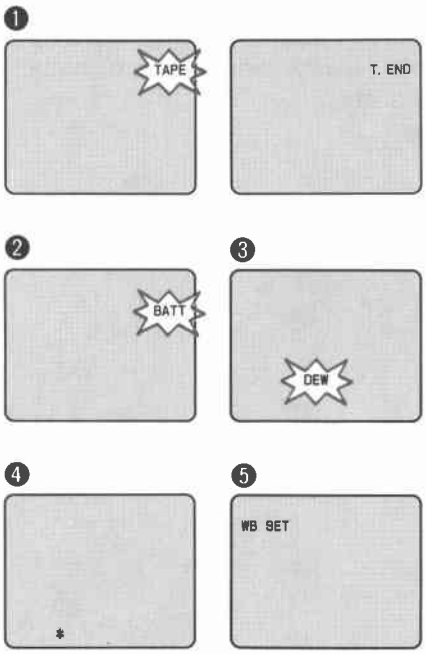
Ⓐ **Viewfinder Display**
Ⓑ **ON SCREEN Button**



The viewfinder displays above appear the first time you turn the camera on and insert a Hi8 video cassette.

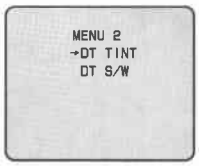


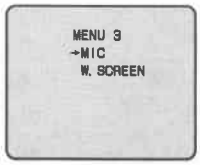
NO.	Mode	Display	Description
❶	Tape Status	TAPE (flashes)	No cassette is loaded or an unrecordable cassette is loaded.
		T. END	Tape has reached the end.
❷	Battery Warning	BATT (flashes)	Battery charge is nearly exhausted.
❸	Condensation Warning	DEW (flashes)	Condensation is detected in camera.
❹	Edit-erase	✱	Appears when edit-erase function can be used, for approximately 40 seconds after recording starts.
❺	White Balance	No display	Auto white balance
		WB SET	White balance set

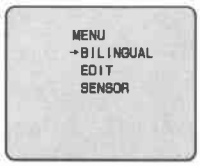


NO.	Mode	Display	Description
❻	Menu 1	MENU 1 GAIN UP SELF FADE-T	Menu 1 display: (CAMERA mode) Each function of this menu can be selected and set.
	Menu 2	MENU 2 DT TINT DT S/W	Menu 2 display: (CAMERA mode) Each function of this menu can be selected and set.
	Menu 3	MENU 3 MIC W. SCREEN	Menu 3 display: (CAMERA mode) Each function of this menu can be selected and set.
	Menu 4	MENU 4 SP/LP TALLY SENSOR	Menu 4 display: (CAMERA mode) Each function of this menu can be selected and set.
	Menu	MENU BILINGUAL EDIT SENSOR	Menu display: (PLAY mode) Each function of this menu can be selected and set.
❼	Gain-up	GAIN ↑	Gain-up mode
❽	High-Speed Shutter	No display	Normal shutter speed
		1/120	1/120th of a second
		1/250	1/250th of a second
		1/500	1/500th of a second
		1/1000	1/1000th of a second
		1/2000	1/2000th of a second
		1/4000	1/4000th of a second
		1/10000	1/10000th of a second
❾	Exposure	+0.5	Overexposure to the normal level (+0.5, +1.0, +1.5, +2.0)
		−0.5	Underexposure to the normal level (−0.5, −1.0, −1.5)
❿	Fade Trigger	FADE-T	Fade trigger function is selected.
		T (flashes)	Camera is ready to record with fade in or fade out.
⓫	Program AE	AUTO	AUTO mode is selected
		SPORTS	SPORTS mode is selected
		PORTRAIT	PORTRAIT mode is selected
		LANDSCAPE	LANDSCAPE mode is selected
		SPOTLIGHT	SPOTLIGHT mode is selected
		SAND & SNOW	SAND & SNOW mode is selected
		No display	MANUAL mode is selected
⓬	Tally Lamp	T ↓	Tally lamp off mode is selected.
⓭	Remote Sensor	S ↓	Remote sensor off mode is selected.

❻







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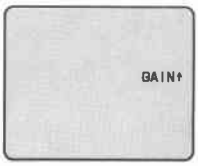

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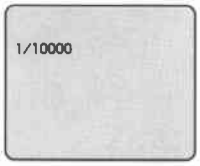

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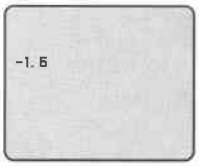
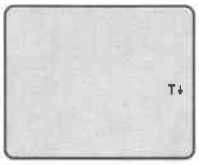


❿

⓫

⓬



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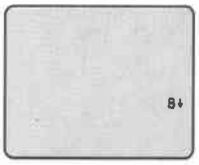
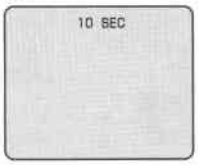


NO.	Mode	Display	Description
⓫	Timer Recording	0 SEC–10 SEC	Recording reminder
		10 SEC–1 SEC	Self-timer countdown
		30 SEC–1 SEC	Self 30 seconds recording
⓯	Timer Recording Menu	SELF SELF 30	Self-timer recording menu
⓰	Recording Speed	SP	Standard play
		LP	Long play
⓱	Operation	PAUSE	Record pause
		REC	Recording
		PLAY	Normal playback, fast forward playback, fast forward search, rewind playback or rewind search
		STILL	Still playback
		STOP	Stop
		FF	Fast forward
		REW	Rewind
		EJECT	Eject function
		EJECT (flashes)	Safety mechanism functions
⓲	Tape Counter	−9:59:59 to 9:59:59	Tape counter reading
⓳	Date	1. JAN. 1991 to 31. DEC. 2010	Current date
⓴	Time	12:00 AM to 11:59 PM	Present time
㉑	Zoom Lens Position	T···∗··W	∗ indicates the approximate focal length of the zoom lens. W indicates wide-angle end and T indicates telephoto end. < (zoom in) and > (zoom out) indicate zooming direction.
㉒	Hi8	Hi8	Hi8 recording mode.
㉓	Title memory/ display	T1	When creating title, it can be stored in title memory 1. When displaying title, title stored in title memory 1 appears.
		T2	When creating title, it can be stored in title memory 2. When displaying title, title stored in title memory 2 appears.
		T1 + 2	Titles in memory 1 and memory 2 are displayed together.
		T1 ∗ 2	Titles in memory 1 and 2 are displayed alternately.

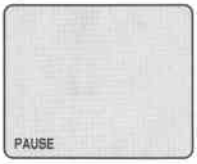
⓮

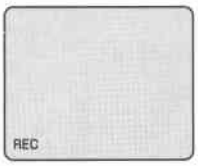


⓯

⓰

⓱

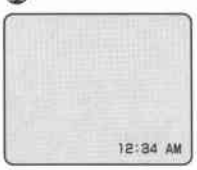




⓲

⓳

⓴

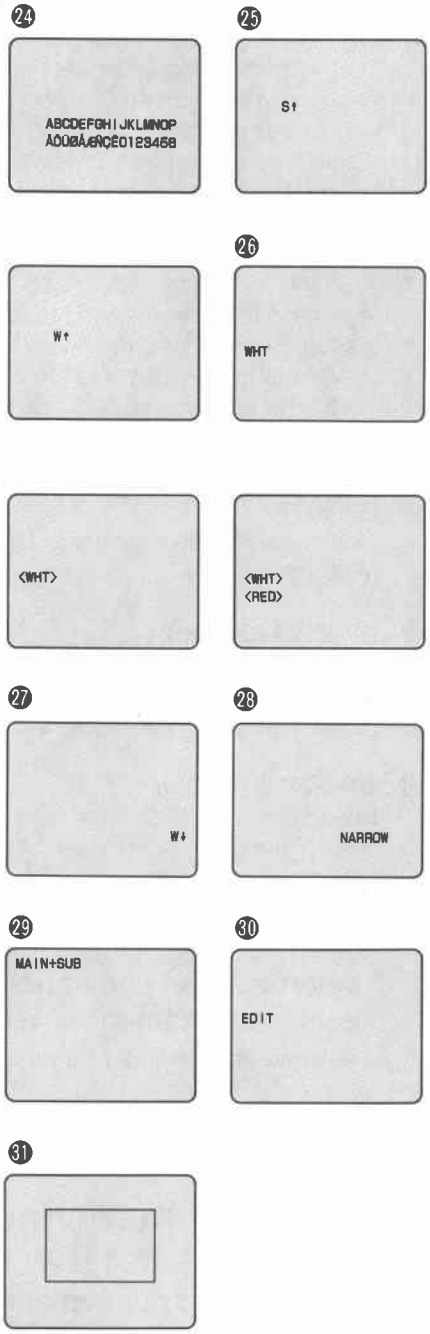


㉑

㉒

㉓

NO.	Mode	Display	Description
㉔	Character Title	2 lines × 16 characters	Alphabet: A to Z Special characters and accents: Ä Ö Ü Ø Å Æ Ñ Ç Ë Numerals: 0 to 9 Symbols: , . / - ' " : ; ? ! * &
㉕	Scroll Display	S ↑, S ↓ S →, S ←	Scrolling title mode is selected. The arrow indicates direction of scrolling.
	Wipe Display	W ↑, W ↓ W →, W ←	Wiping title mode is selected. The arrow indicates direction of wiping.
㉖	Digital Title	WHT, BLU, GRN, SKY, RED, VIO, YEL, BLK	Digital title colours are displayed. Digital title colour selection: white, blue, green, sky blue, red, violet, yellow, black.
		<WHT>	See-through colour (The same eight colours can be selected.)
		<WHT> <RED>	Colour and display mode of title in T1 and title in T2 are displayed on upper and lower lines, respectively.
㉗	Auto wind screen	W ↓	Auto wind screen off mode is selected.
㉘	Microphone Angle	NARROW	Narrow recording angle is selected.
		WIDE	Wide recording angle is selected.
		ZOOM	Recording angle adjusted to zoom action is selected.
㉙	Bilingual	No display	Normal
		MAIN	Main soundtrack playback of bilingual tape is selected.
		SUB	Substitute soundtrack playback of bilingual tape is selected.
		MAIN+SUB	Main+Substitute soundtrack playback of bilingual tape is selected.
㉚	Edit mode	EDIT	Edit mode is selected.
㉛	Focus mode	(Focus zone)	When autofocus mode is selected, the focus zone is displayed.
		No display	The focus zone is not displayed in manual focus mode.



Power Sources

Battery Pack

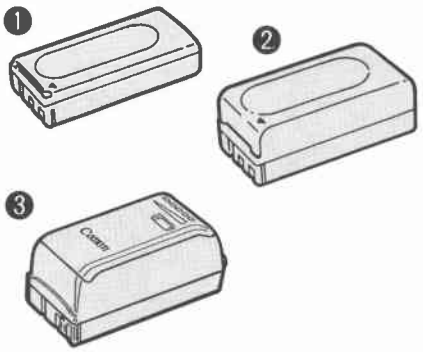
The battery pack is a rechargeable power source. Make sure it is fully charged before use. This camera can also be operated from AC power or from a car battery (see p. 20).

- The power consumption of the video camera varies according to the operating conditions. Consequently, the actual recording time may be shorter than the time shown on page 17. Using the battery pack in low temperatures will shorten the recording time. When recording under these conditions, it is recommended to prepare enough battery packs to cover two or three times the scheduled length of time. Make sure the power is turned off when not using the camera. The camera will continue to consume power when the power is on. (The camera also continues to consume power even when the power is turned off. See p. 19.)

❶ **BP-E77K**
Continuous recording time of BP-E77K is approximately 45 minutes.

❷ **BP-E722 (Option)**
With about twice the capacity of BP-E77K this battery pack can be used for lengthy recordings. The continuous recording time of BP-E722 is approximately 90 minutes.

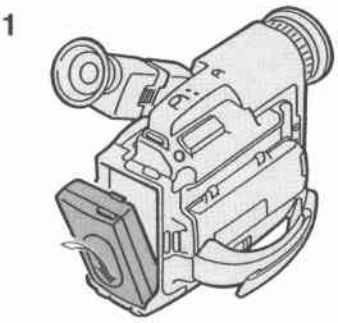
❸ **BP-E722D (Option)**
In addition to its 90 minute long-recording capacity, this battery pack is equipped with LED indicators for displaying the remaining charge.

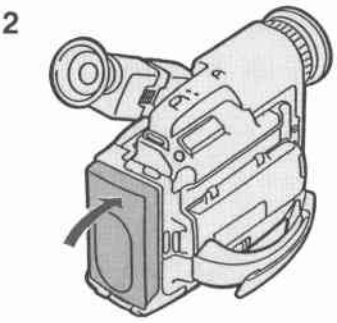


Attaching Battery Pack [1]

1. **Insert marked end of battery pack into battery pack compartment.**
   - Slightly lift viewfinder for easy battery loading.
2. **Press battery pack until it clicks and locks into place.**

[1]

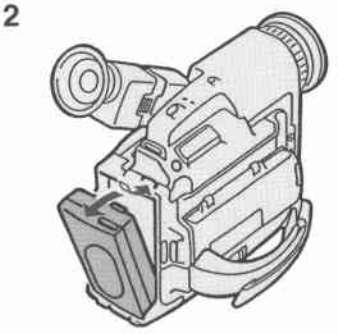




Removing Battery Pack [2]

1. **Hold BATT EJECT lever pressed in direction of arrow and pull top of battery pack as shown.**
   - Slightly lift viewfinder for easy battery unloading.
2. **Remove battery pack.**

[2]



Charging Battery Pack

The following accessories can be used to charge the battery pack.

- CA-100 Compact Power Adapter (see p. 20)
- CB-110 Car Battery Adapter (option) (see p. 20)
- MC-100 Multi-battery Charger (option) (see p. 102)

Using the CA-100 [3]

(For information on other accessories, refer to the relevant instruction manuals.)

1. Connect battery pack to CA-100.

- Make sure that battery pack guide ❶ on the CA-100 and battery pack groove ❷ are properly aligned before attaching battery pack.

2. Plug into mains outlet.

- Power indicator (green) ❸ lights up and charge indicator (orange) ❹ flashes as charging begins.

3. When charging has been completed (the charge indicator lights up), remove battery pack.

- Lift battery pack straight up to remove.

Battery pack continuous recording times and CA-100 charging times are shown below.

Battery Pack	Continuous recording time	Charging time
BP-E77K	approx. 45 minutes	approx. 70 minutes
BP-E722/BP-E722D	approx. 90 minutes	approx. 130 minutes
BT-U1 (using six AA alkaline batteries)	approx. 20 minutes	—

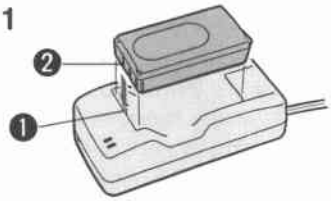
Battery Warning [4]

When battery charge is nearly exhausted, "BATT" flashes in camera viewfinder and CAMERA or PLAY indicator also flashes. Replace or recharge battery pack (turn the power off, the indicator goes off after a few seconds, then remove the battery pack).

- If camera is turned on with an exhausted battery pack attached, it may turn off immediately, without a "BATT" warning.

[3]

1



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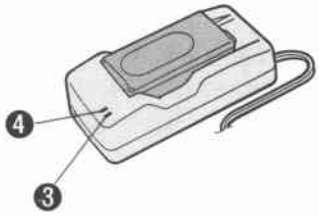

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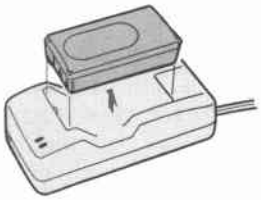
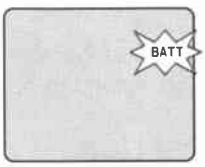


[4]

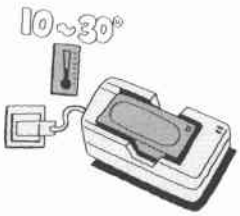


Using Your Battery Packs Effectively

Immediately After Purchase

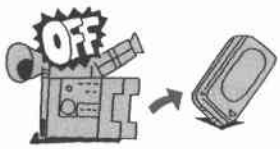
- Newly purchased battery packs have not been charged, so charge them completely before using.
- Battery's ⊕ and ⊖ terminals may short circuit if they come in contact with any metal objects. Take care when handling the battery pack, and keep it in plastic or other protective covering when carrying or storing.
- When charging a brand-new battery pack or one that has not been used for approximately three months, charge it completely once with the CA-100 (or CB-110) until charge indicator lights up. Then disconnect and reconnect the battery pack and charge it once more.

Charging



- It is possible to charge the battery pack when the ambient temperature range is between 0°-40°C. For best results, charge the battery pack when ambient temperature is between 10°-30°C.
- After the battery pack has been fully charged, do not try to recharge it. Recharging a fully charged battery pack can cause it to become overcharged.
- Immediately after use, the battery pack will be hot and it is best not to recharge it at this time. Make sure that the battery pack has cooled down before recharging.
- When you don't expect to use the battery pack for a long time (three months or more), **store in a discharged condition**. Storing in a charged condition will shorten operating life of battery pack.
- Always disconnect the DC-100 from the CA-100 (or CB-110) before charging the battery pack.

General Use



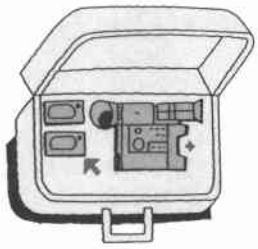
- Battery pack normally becomes warm during use.
- Be sure to turn camera off (the CAMERA or PLAY indicator goes off) before removing battery pack. Removal during operation may cause damage.
- Recharging battery pack before it is fully discharged will cause its electrical storage capacity to decrease (charge memory). In this case, discharge the battery pack until the CAMERA or PLAY indicator on the video camera turns off. Recharging the battery using the optional MC-100 Multi-battery Charger's refresh (recondition) feature will restore the battery pack.
- When battery pack has been discharged below a specified level, you may be unable to recharge it completely (battery pack will not recharge fully even though charge indicator lights up). In such a case, charge and discharge battery pack repeatedly (2-3 times) until it is recharged properly.

Storage

- When the battery pack is connected to the camera, it will continue to discharge even when the power is turned off, and this may cause it to become discharged below the specified level. Disconnect the battery pack from the camera when storing.
- When storing the battery pack for a long period of time, choose a cool, chemically stable location. Allow it to discharge completely by connecting it to the camera and waiting until the CAMERA or PLAY indicator turns off (about 10 minutes after it begins to flash).
- If battery pack has been stored for three months or longer, a single recharging will not be sufficient to restore it to full operability. In such a case, completely recharge and completely discharge battery pack 2-5 times. This will restore it to its original capacity.

Terminology

- **Overcharging**
  Charging battery pack after it has already been fully charged.
- **Discharging below specified level**
  Continuing to discharge battery pack after its voltage level has fallen below a specified level (5.0 V for the nickel cadmium batteries used by Canon 8mm video camcorders).
- **Charge memory**
  When a nickel cadmium battery is only partially discharged (not long enough for charge to cut off automatically), then recharged and used again, continuous recording time decreases. The battery pack will temporarily be incapable of discharging to final voltage level.



AC Power/Car Battery

Camera can also be operated using AC power, or car battery.
When operating from AC power, use CA-100 Compact Power Adapter and DC-100 DC Coupler.
When operating from a car battery use CB-110 Car Battery Adapter and DC-100 DC Coupler.

CA-100 Compact Power Adapter (Using AC power) 5

Plug into mains outlet.
Input voltage: 100-240 V AC, 50/60 Hz
- Use with the DC-100 DC Coupler.
- Refer to the CA-100 instruction manual for further details.

CB-110 Car Battery Adapter (Option) (Using car battery) 6

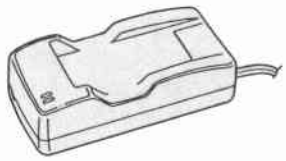
Plug into cigarette lighter socket. (For use only with 12-24 V DC, negative ground car battery.)
- Use with the DC-100 DC Coupler.
- Refer to the CB-110 instruction manual for further details.

CA-100/CB-110 Connection Procedure 7

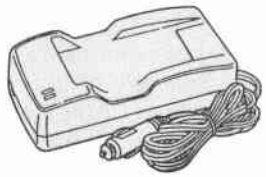
1. **Insert DC-100 DC Coupler into power source compartment.**
   - Insert and remove in the same way as the battery pack (see p. 16).
2. **Connect DC-100 cable to CA-100 (or CB-110) adapter.**
   - ❶ **CA-100 (CB-110)**
   - ❷ **DC-100**
3. **Insert AC plug of CA-100 into mains outlet. (Plug CB-110 into cigarette lighter socket).**
   - Use the CB-110 with the car engine idling.
4. **Turn camera on.**

Note:
- Using compact power adapter near a TV may cause TV to emit noise. If this occurs, move compact power adapter away from TV or aerial cable.

5

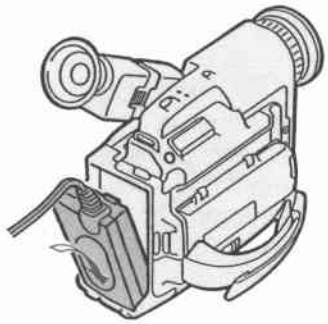


6



7

1



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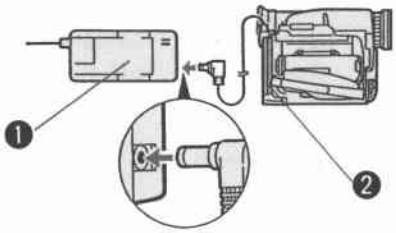

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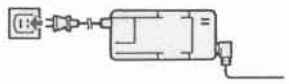


4

BT-U1 Battery Case (Option)

The optional BT-U1 Battery Case allows you to use alkaline batteries for the power source.

1. **Load six LR6/AA alkaline batteries into the BT-U1 Battery Case.**
   - Be careful not to reverse the polarity of the batteries.

2. **Insert the BT-U1 Battery Case into the power source compartment.**
   - Insert and remove in the same way as battery pack (see p. 16).

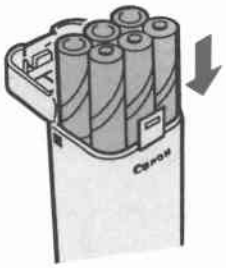
3. **Turn camera on.**

Notes:

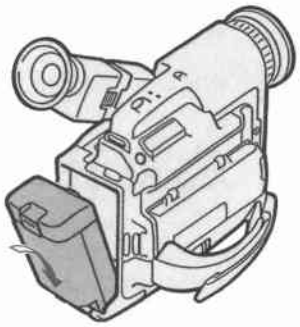
- When replacing the batteries, turn camera off before removing the BT-U1 Battery Case.
- Use only alkaline batteries. Other types of batteries cannot be used.
- When changing exhausted batteries, replace all batteries at once.
- When not using the BT-U1 for a long time, remove the batteries.
- Cannot be used in low temperatures.
- Refer to the BT-U1 instruction manual for further details.
- Battery's ⊕ and ⊖ terminals may short circuit if they come in contact with any metal objects.
- Always keep the BT-U1 in the case provided for storage and transport.

Depending on the type of alkaline battery used, the continuous recording time may decrease greatly or in some cases the power may not turn on.

1



2



3

Camera Preparations

Attaching Straps [1]

Attach the SS-200 Shoulder Strap by passing ends through the upper and lower strap attachment bars located on rear of camera. Adjust length and fasten.

❶ **SS-200 Shoulder Strap**

Attach the WS-20 Wrist Strap (option) by passing it through the lower strap attachment bar located on rear of camera. Adjust length to hang comfortably from wrist and fasten.

❷ **WS-20 Wrist Strap (option)**

Adjusting Grip Belt [2]

Adjust the length of the grip to provide a comfortable, secure grip.

Lens Cap and Lens Hood [3]

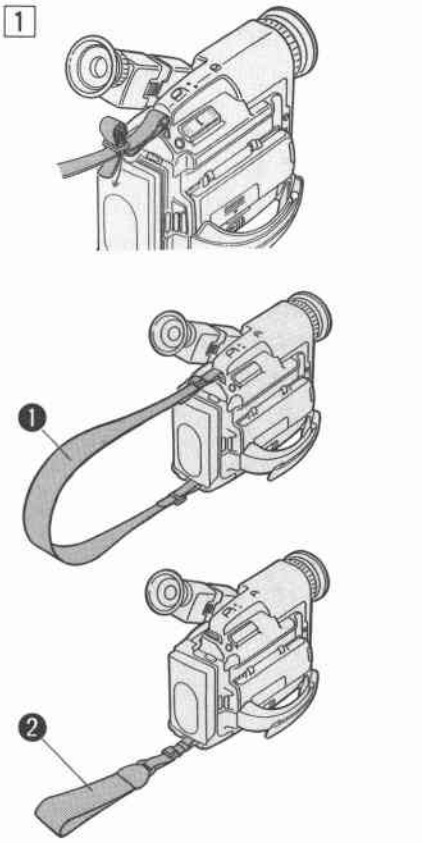
Pass the provided cord through the loop on the lens cap, as shown. Then, pass the grip belt of the camera through the ring of the lens cap cord. Attach the lens cap over the lens hood. Before recording, remove the lens cap and use its clip to hook it onto the grip belt. When using a filter, remove the lens hood, attach the filter on the focusing ring and place the lens hood over the filter.

❸ **Lens Cap**
❹ **Filter**
❺ **Lens Hood**

Note:

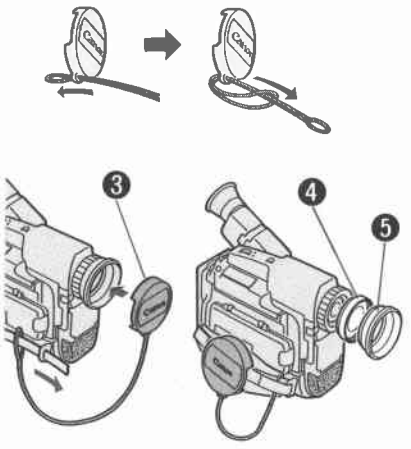
- When removing the lens hood, hold the camera firmly in one hand and rotate the lens hood with the palm of the other hand. Using excessive force may cause damage.

[1]



[2]

[3]



Adjusting Viewfinder Angle [4]

Viewfinder rotates 90°. Choose desired angle for recording. When recording, pull out the finder and push it back in when recording is finished.

- When shooting in a low angle position, use the start/stop button located underneath the viewfinder. ❶

Adjusting Diopter [5]

Adjust diopter to individual eyesight correction when using camera for the first time, when changing camera operators, or when changing eye distance from the finder.

To adjust diopter:

Turn camera on and pull out the finder. Turn diopter adjustment ring until viewfinder displays are clearly visible.

❷ **Diopter Adjustment Ring**

Removing and Attaching Finder [6]

When there is dust or lint on viewfinder display, remove finder and clean it with a commercially available blower brush.

To remove:

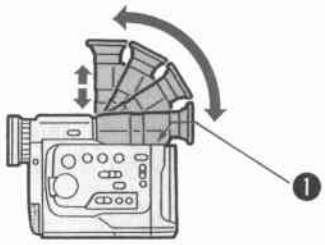
1. **Pull finder out from its base until it clicks.**
2. **Slide finder RELEASE switch in the direction of the arrow and gently slide finder off.**

To attach:

1. **Align finder with base and press finder in until it clicks.**

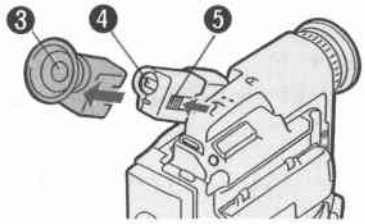
❸ **Finder**
❹ **Viewfinder Display**
❺ **Finder RELEASE Switch**

[4]



[5]

[6]

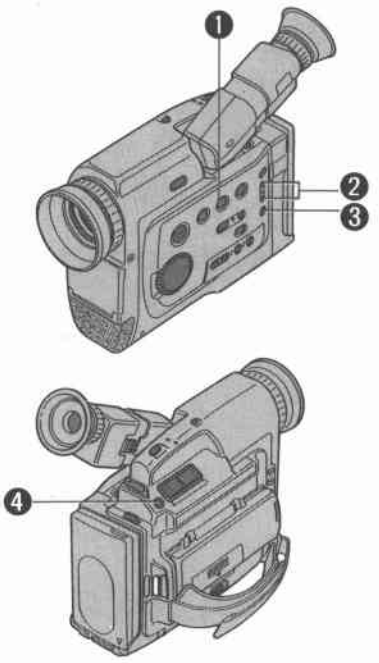


Setting Date and Time

Set date and time before using camera for the first time. Reset if camera has been stored for a long period and the date and time display has stopped or an incorrect date and time are displayed. Due to the built-in rechargeable lithium battery, the date and time functions work even with the power turned off. Connect AC power to camera for about one day to charge lithium battery before using camera for the first time. (see p. 26)

Example: Setting date to 8 December, 1992 and time to 2:35 pm.

❶ **DATE Button**
❷ **+/– Buttons**
❸ **SELECT Button**
❹ **OPERATE Button**



1. Turn camera on.

- CAMERA indicator (red) lights up.

2. Press and hold DATE button for more than 3 seconds.

- Year display flashes.

3. Press + and – buttons to scan year display.

- Press once to scan display one year at a time.
- Press and hold to scan display years quickly.
- Press – button to scan display in reverse order.

1991 ⇄ 1992 ⇄ ··· ⇄ 2008 ⇄ 2009 ⇄ 2010

4. Press SELECT button.

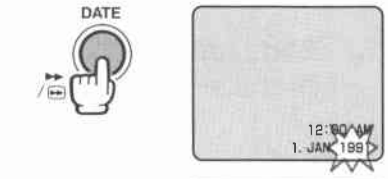
- Year is set and month display flashes.

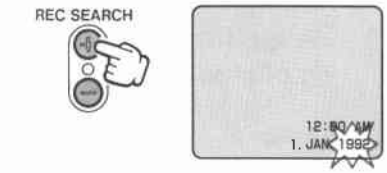
5. Press + and – buttons to scan month display.

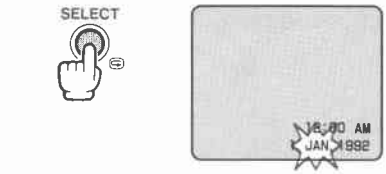
JAN ⇄ FEB ⇄ ··· ⇄ OCT ⇄ NOV ⇄ DEC

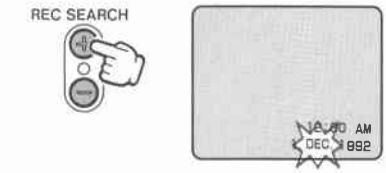
6. Press SELECT button.

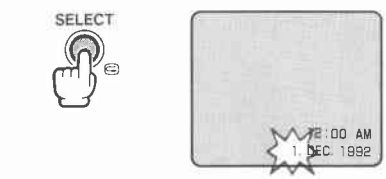
- Month is set and day display flashes.











7. Press + and − buttons to scan day display.

- Camera knows the number of days in each month and which years are leap years.

1 ⇄ 2 ⇄ 3 ⇄ 4 ⇄ 5 ⇄ ··· ⇄ 27 ⇄ 28 ⇄ 29 ⇄ 30 ⇄ 31

8. Press SELECT button.

- Date is set and hour display flashes.

9. Press + and − buttons to scan hour display.

- Hour display rotates through 24 hours.

12 AM ⇄ 1 AM ⇄ ··· ⇄ 10 PM ⇄ 11 PM

10. Press SELECT button.

- Hour is set and minute display flashes.

11. Press + and − buttons to scan minute display.

- To return to year display press SELECT button.

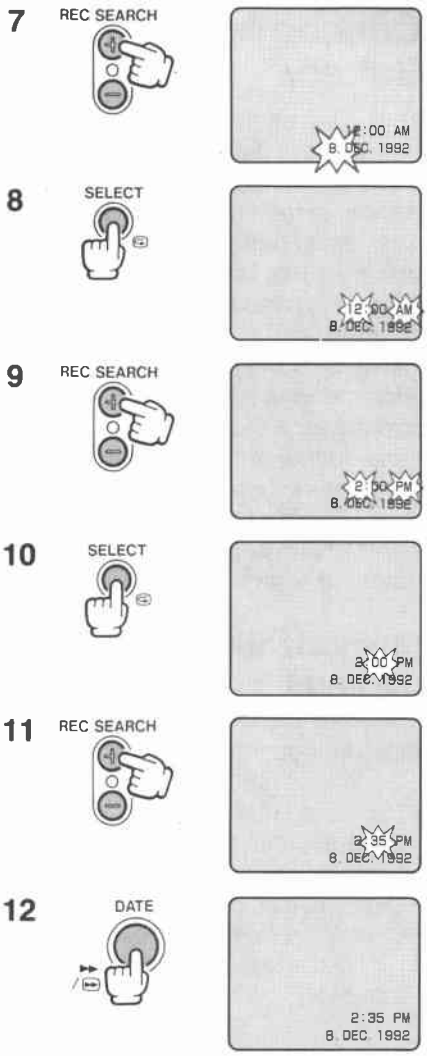
00 ⇄ 01 ⇄ 02 ⇄ ··· ⇄ 58 ⇄ 59

12. Press DATE button when correct minute is shown.

- Minute display stops flashing and auto date and time start functioning.
- Press DATE button to make display disappear from viewfinder.

Notes:

- To make a partial change to date or time setting, follow steps one and two. Then press SELECT button to select setting to be changed.
  When the change has been made, press DATE button once more.
- To record date and time, see page 87.
- Date and time cannot be set in the following circumstances:
  1. During recording
  2. In PLAY mode
  3. When a menu is displayed
  4. When creating character titles



Concerning the Rechargeable Lithium Battery

This video camera has a rechargeable lithium battery to supply power to the date and time memory and memory for other camera settings (see below). Even when the power source is disconnected, the date and time function will keep on working. The lithium battery is automatically recharged whenever a power source is connected to the video camera. If the video camera is used regularly, the lithium battery will remain charged.
However, if the battery pack is removed and the video camera is stored for a long period, the lithium battery slowly discharges and the auto date/time function may stop operating. In this case, recharge the lithium battery by connecting AC power to the camera for approximately one whole day. Also reset the date and time (see p. 24).

- The lithium battery can be recharged even when the video camera power is not turned on.

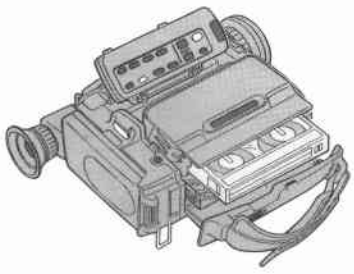
Memorization of the camera's selected settings

The following settings are memorized even when the power is turned off due to the built-in lithium battery:

- Date and time
- Tape counter
- Digital title
- Digital title colour
- Digital title reverse mode
- Digital title see-through mode
- Digital title shadow mode
- Digital title scroll/wipe
- Character title
- Tally on/off mode
- Sensor on/off mode
- Fade trigger mode
- Microphone angle
- Auto wind screen on/off mode

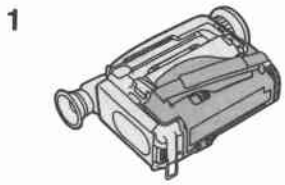
Loading and Unloading Video Cassettes

Use video cassettes with the Hi8 mark (E5/P5 types) or the 8 mark (P5 type). Be sure to attach a power source to the camera before loading or unloading a video cassette. When a power source is attached the EJECT button will work even if the camera is turned off.

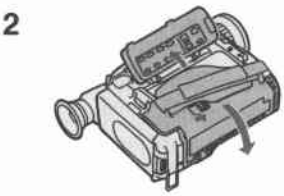


Loading/Unloading

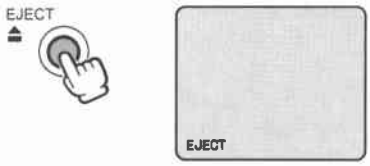
1. **Place the camera so that wireless controller and hand grip are on top.**



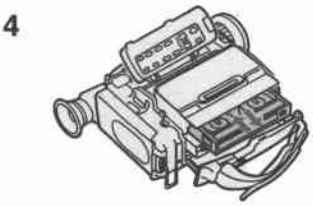
2. **Lift wireless controller, slide UNLOCK switch and open video cassette compartment cover.**
   - With cover open, EJECT button is visible.



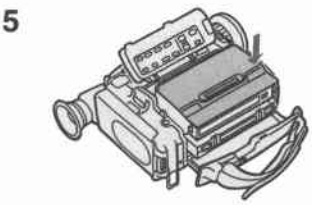
3. **Press EJECT button.**
   - Video cassette compartment opens automatically.



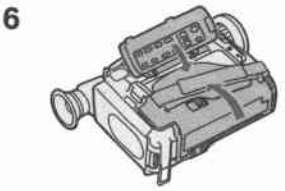
4. **Load/unload video cassette.**
   - When loading, gently insert video cassette with window facing out.
   - When unloading, remove video cassette by pulling straight out.



5. **Press PUSH mark on video cassette compartment.**
   - Video cassette compartment closes automatically.



6. **Close and press video cassette compartment cover until it clicks and return wireless controller to its original position.**



Notes:

- When EJECT button is pressed, video cassette compartment opens automatically. Do not try to pull compartment open during this automatic stage, as it may cause a malfunction.
- Tape counter will be reset to 0:00:00 when video cassette is loaded.
- If a cassette is removed and then reloaded, the tape position will change slightly.
  Therefore, after reloading the cassette, use the record search function to locate the desired starting point (see p. 38).
- While the video cassette compartment is in the process of closing, it pauses and reopens slightly before closing completely. This is not a malfunction.

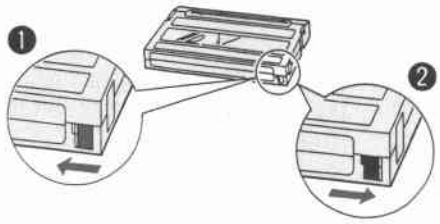
Make sure the video cassette compartment has completely closed before closing the video cassette compartment cover.

Video cassette erasure prevention switch

To prevent accidental erasure of recorded material, slide the switch at the bottom of the video cassette as shown. Returning the switch to its original position enables recording again. Refer to the video cassette instructions for information on erasure prevention.

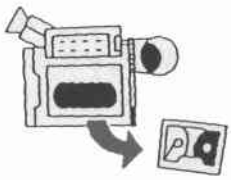
- "TAPE" flashes in viewfinder if you try to record on a video cassette that has been set for erasure prevention. Use another video cassette or set the switch to enable recording.

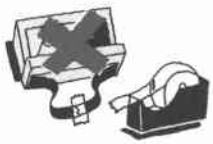
❶ **To Save: Erasure Prevention**
❷ **To Record: Recording Possible**

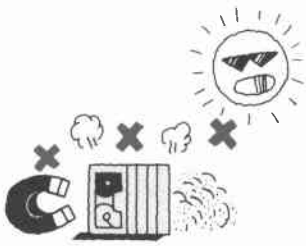


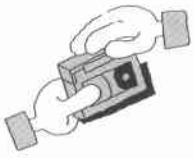
Notes:

- Do not leave the video cassette in the camera after use, especially when the camera will not be used for a long time. This may cause damage to the video cassette and heads.
- There are several holes in the back of the video cassette which are used for transferring information. Do not cover these with adhesive tape or other materials.
- Do not use video cassettes with damaged or spliced tape or ones that do not meet standards.
- Store video cassettes in their cases and avoid storing them under the following conditions:
  - In excessive heat or humidity
  - Near strong magnetic fields
  - In direct sunlight
  - In dusty or dirty places
  - Where mould may affect them
- Do not drop, knock, or subject the video cassette to excessive shocks. This may cause tape slack and lead to malfunction.
- Using a video cassette immediately after removing the wrapping will cause static electricity and lead to malfunction. After unwrapping, touch the video cassette as shown.









What is Hi8?

Hi8 is the latest in the field of home video recording techniques developed to improve the recording and playback picture. Using the 8mm video format as its base, Hi8 extends the picture resolution for images far clearer and sharper than ever before. Compatibility with the standard 8mm format is maintained. With this camera you can record and play back video cassettes with either the Hi8 or 8 mark.

Video cassettes

A special video cassette with the Hi8 mark is required for Hi8 video recording. The Hi8 Metal-E cassettes are the metal-evaporated type and the Hi8 Metal-P cassettes have metal-particle coating.

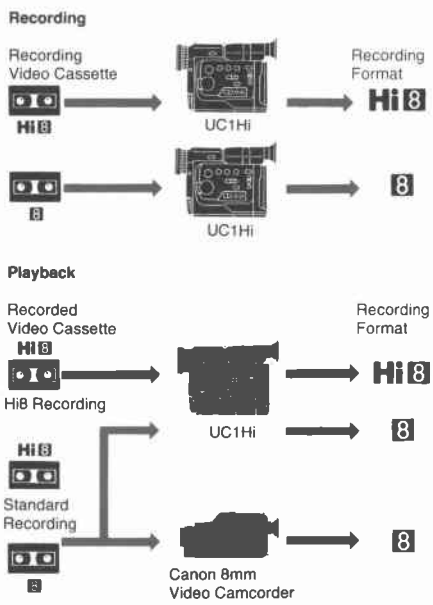
Compatibility with normal 8mm cassettes

The compatibility of Hi8 and normal 8mm is shown in the figure.

- Recording and playback in normal 8mm are possible on Hi8 units.
- Video cassettes recorded in Hi8 cannot be played back on normal 8mm units.
- The Hi8 format cannot be recorded on normal 8mm units.

Television

Use a television equipped with an S-video input terminal for Hi8 playback.

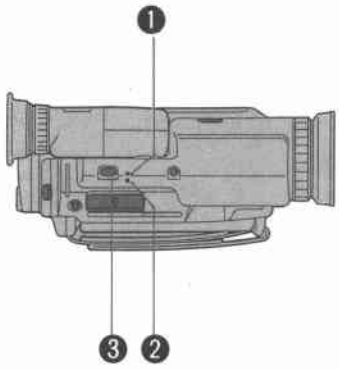


Basic Operations

CAMERA and PLAY Modes

The camera has two basic modes of operation: CAMERA mode for recording and PLAY mode for playback.

❶ **CAMERA Indicator (red)**
❷ **PLAY Indicator (green)**
❸ **MODE SELECT Button**



CAMERA Mode [1]

Make your recordings in CAMERA mode.
When camera is turned on, it automatically enters CAMERA mode and red CAMERA indicator lights up.

PLAY Mode [2]

Use PLAY mode to play back your recordings.
Press MODE SELECT button once to select PLAY mode. Red CAMERA indicator goes off and green PLAY indicator lights up.

[1]

[2]

CAMERA and PLAY Indicators

CAMERA indicator (during CAMERA mode) or PLAY indicator (during PLAY mode) lights up during normal operation, and flashes to warn that there is internal condensation or a malfunction, or to indicate that battery pack needs to be recharged.

Mode Selection 3

MODE SELECT button can be used to switch between CAMERA mode and PLAY mode.

The wireless controller can also be used to switch modes:

- If STOP button is pressed during CAMERA mode (record pause mode), the camera switches automatically to PLAY mode.
- If REC button is pressed while the camera is in PLAY mode and the tape is either stopped or in still playback mode, the camera automatically switches to CAMERA mode.

❶ **REC Button**
❷ **STOP ■ Button**

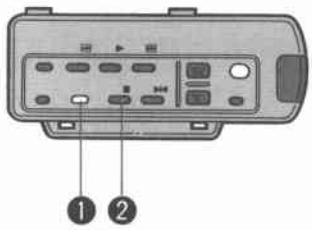
Dual-mode Buttons 4

The five buttons located on right side of camera and the button located on top of the camera have different functions in CAMERA and PLAY modes.

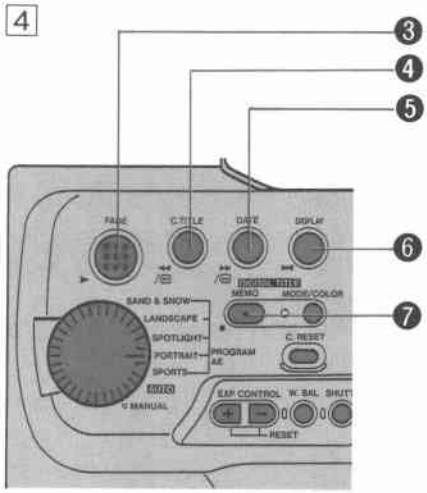
- Functions indicated in white are active during CAMERA mode.
- Functions indicated in blue are active during PLAY mode.

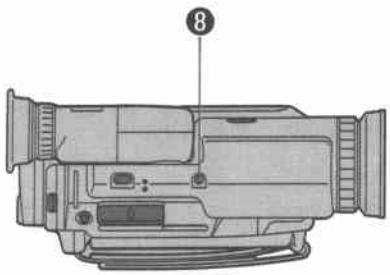
CAMERA mode (white)	PLAY mode (blue)
❸ FADE button	▶ (PLAY) button
❹ C. TITLE button	◀◀/ (REW) button
❺ DATE button	▶▶/ (FF) button
❻ DISPLAY button	▶‖◀ (STILL) button
❼ MEMO button	■ (STOP) button
❽ EDIT ERASE button	BLANK TAPE SEARCH button (This button is not indicated in blue.)

3



4



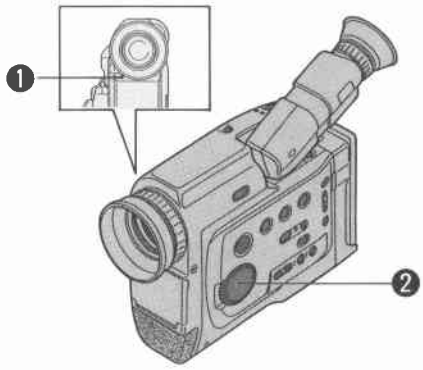


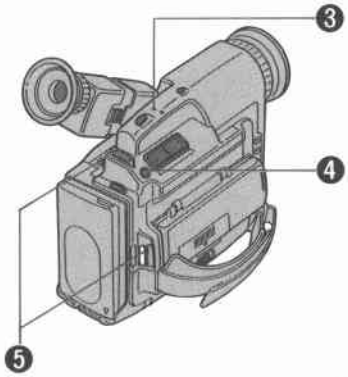
Camera Recording (CAMERA Mode)

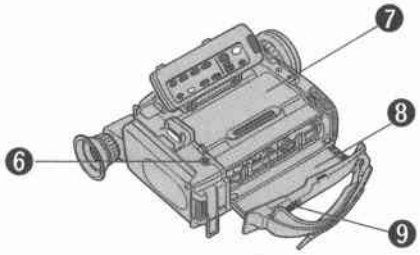
Use 8mm video cassettes marked with the Hi8 mark (E5/P5 types) or the 8 mark (P5 type).
The camera automatically adjusts the iris, shutter speed and sensitivity level when you set the PROGRAM AE selector to AUTO after turning on the camera.

Camera Recording

❶ **Tally Lamp**
❷ **PROGRAM AE Selector**
❸ **CAMERA Indicator (red)**
❹ **OPERATE Button**
❺ **Start/Stop Buttons**
❻ **EJECT Button**
❼ **Video Cassette Compartment**
❽ **Video Cassette Compartment Cover**
❾ **UNLOCK Switch**





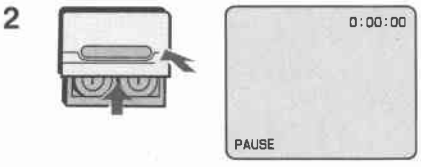


1. Turn camera on.

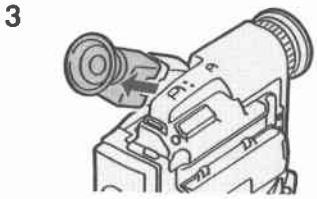
- CAMERA indicator (red) lights up.

2. Load video cassette in camera.

- Camera goes into record pause mode.
- For loading procedure, see page 27.



3. Pull out finder in the direction of the arrow.



4. Set the PROGRAM AE selector to AUTO.

- "AUTO" is displayed in viewfinder.

5. Press start/stop button.

- Recording starts.
- The tally lamp flashes rapidly and "REC" appears in viewfinder.
- To make more effective recordings, refer to the Advanced Operations section (p. 56).

6. Press start/stop button to temporarily stop recording.

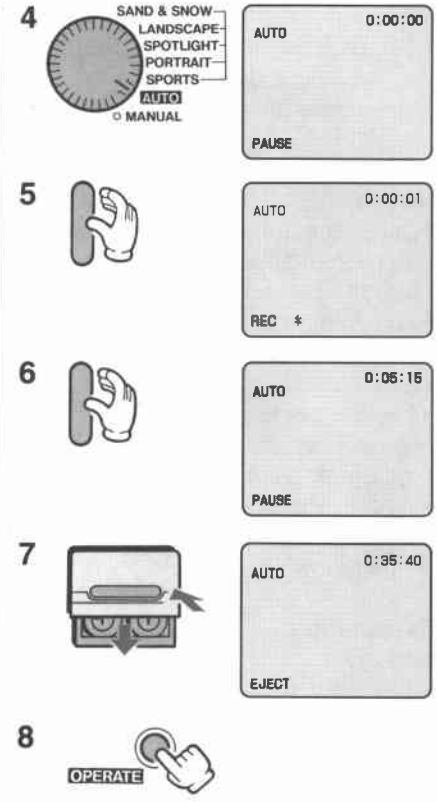
- Press the start/stop button again to resume recording.
- See "Record Review" (p. 39) to check your recording.

7. When recording is finished unload video cassette.

- For unloading procedure, see page 27.

8. Turn camera off.

- CAMERA indicator goes off.



Hints:
- Before recording, make sure the date and time have been correctly set. See page 24 for details.
- Make sure the lens is properly cleaned for maximum picture quality.

Notes:
- Camera automatically turns off, if record pause mode lasts more than approximately five minutes. To resume recording turn the camera on and press the start/stop button.
- To avoid mistakes, check the viewfinder display for correct mode during shooting.
- Avoid pressing the start/stop button repeatedly.
- Avoid recording near sources of strong electric or magnetic fields, such as TV towers, as this may cause noise in the picture or a camera malfunction.
- When recording in dark places, a bright light in the scene may cause a vertical bar (smear) to appear on the screen (see below).

Explanation:
Smear:
A luminous bar appears vertically on the screen where excessively bright area in a scene was recorded.
Smear is caused by:
- Spotlights, directly recorded on a stage, for example.
- Burning candles on a cake recorded directly.
- Objects reflecting light, such as car bodies and traffic signs, recorded directly.
- Use of the high-speed shutter.

Auto Wind Screen Function
The camera includes a wind screen function which automatically detects and reduces wind noise. This function is useful to prevent wind noise from reducing or covering up the sounds you wish to record. This function can be turned off when recording in locations where there is no wind, such as indoors.

Tape Counter [1]

During recording, the tape counter in the viewfinder indicates how long you have recorded.

❶ **You have recorded for approximately 35 minutes and 40 seconds.**

- Tape counter is reset each time a video cassette is loaded or when the C. RESET button is pressed.
- Tape counter also operates during search and playback. This indicates how long the tape has been running.
- Tape counter time and actual recording duration may differ. It should only be used as a rough guide.

Recording Reminder [2]

When recording starts, camera displays 0 SEC through 10 SEC in viewfinder to indicate the first 10 seconds of recording. This function is designed to help you make sure your scenes are not too short, for easy viewing and editing. Try to record at least the full 10 seconds.

- Actual recording begins after timer starts counting.

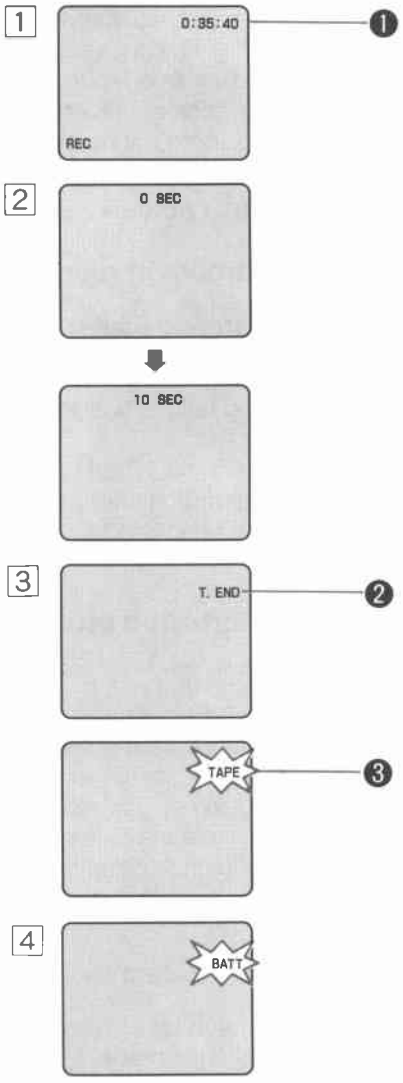
Video Cassette Warning [3]

"T. END" appears in the viewfinder when the tape is completely used up and recording stops. ❷
"TAPE" flashes in the viewfinder if the camera is turned on and a video cassette is not loaded or in CAMERA mode if the erasure prevention switch of loaded video cassette is set to save. ❸

Battery Pack Warning [4]

"BATT" flashes in the viewfinder when the battery pack charge is nearly exhausted. When this occurs, prepare another power source.

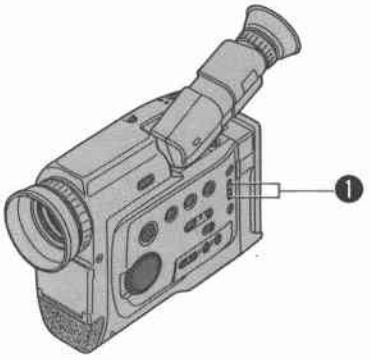
- If the camera is turned on with an exhausted battery pack attached, it may turn off immediately, without a "BATT" warning.



Record Search (CAMERA Mode)

Use the record search function to locate the desired point to resume recording. Record search can also be used to eliminate noise between recorded scenes. Use this function when you make additional recordings on a previously used video cassette—there will be no noise between the previously recorded scene and the newly recorded scene.

❶ **REC SEARCH Buttons**



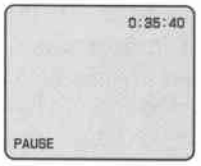
1. Place camera in record pause mode.

2. Press REC SEARCH + or − buttons to locate recording start position.

- Press and hold − button to play back recording in reverse.
- Press and hold + button to play back recording forward.
- When the buttons are released a still picture is displayed briefly and camera returns to record pause mode.

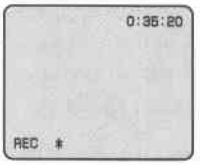
3. Press start/stop button to resume recording.

1

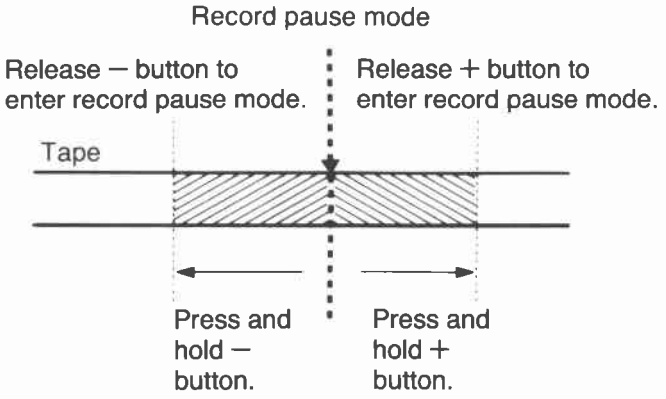


2 REC SEARCH

3



Explanation:
Record search (to resume recording)
During record pause mode, press REC SEARCH + or − buttons to play back scene normally, or in reverse, at normal playback speed. When you reach the point where you want to begin recording, release button. Camera returns to record pause mode. Playback picture can be monitored in viewfinder, to locate precise point to begin recording.


Record pause mode
Release − button to enter record pause mode.
Release + button to enter record pause mode.
Tape
Press and hold − button.
Press and hold + button.

❷

❸

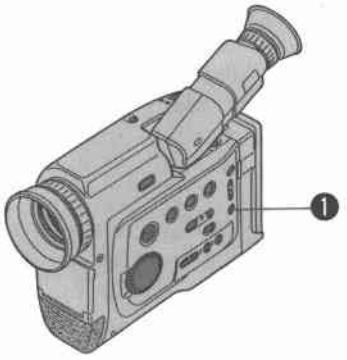
Notes:
- Noise bars and skew (picture distortion) may appear during record search. This is not a malfunction.
- The record search function will not operate unless the camera is in record pause mode.

❷ **Noise bar**
❸ **Skew (distorted picture)**

Record Review (CAMERA Mode)

Press the ⟲ (record review) button during record pause mode to play back the last segment of the recorded scene (approximately three seconds) in the viewfinder.

❶ ⟲ **(Record Review) Button**



1. Place camera in record pause mode.

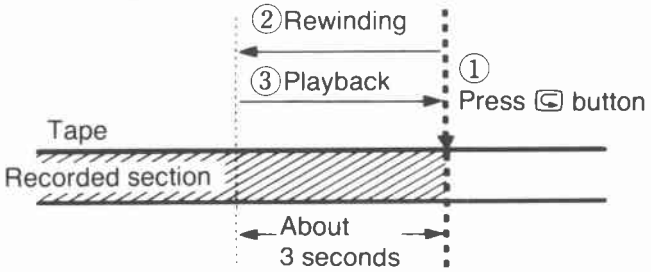
2. Press ⟲ (record review) button.

- Scene plays back in viewfinder.
- When record review is completed, camera returns to record pause mode.

3. Press start/stop button to resume recording.

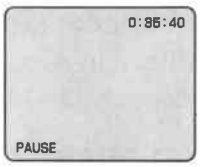
- Recording will continue from the last recorded scene.

Explanation:
Record Review
A function used in record pause mode to play back the last three seconds of recording in the order (① to ③) shown below. The camera returns to record pause mode after playback has ended.



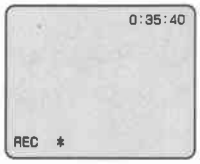
Record pause mode

1



2

3



❷

❸

Notes:

- Noise or skew (picture distortion) may appear on the screen during record review.
- During record review none of the buttons other than the OPERATE button are operable (pressing the OPERATE button turns the power off).
- The record review function will not operate unless the camera is in record pause mode.

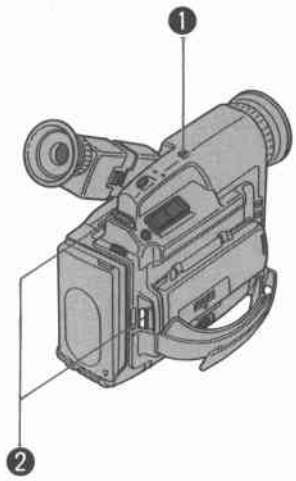
❷ **Noise bar**
❸ **Skew (distorted picture)**

Edit-erase (CAMERA Mode)

When an undesirable object or sound is recorded, such as someone walking across the picture or the sound of a car horn, the edit-erase function can be used to quickly return to the precise point where recording began, and record the scene again. This function only operates during the first 40 seconds or so of recording.

For about 40 seconds after starting to shoot a scene, a ∗ (asterisk) mark appears in the viewfinder next to the operating display. The edit-erase function can be used while this ∗ mark is displayed.

❶ **EDIT ERASE Button**
❷ **Start/Stop Buttons**



1. Make sure that ∗ (asterisk) is displayed, then place camera in record pause mode.

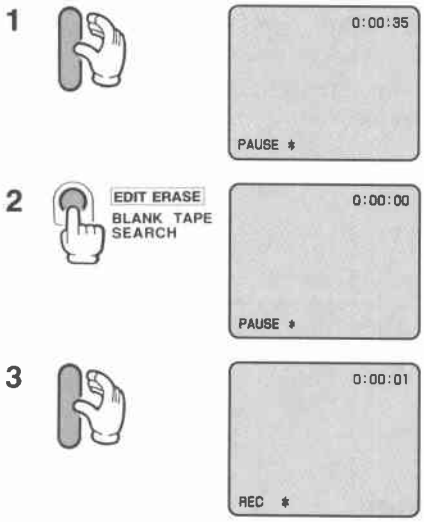
- Asterisk appears also in record pause mode.

2. Press EDIT ERASE button.

- Tape is rewound to recording start point at 3 times normal speed, and recorded picture is displayed (in reverse) in viewfinder. Camera returns automatically to record pause mode at the start of scene you want to record over.
- Asterisk disappears from viewfinder.

3. Press start/stop button to resume recording.

- Previously recorded scene is erased.



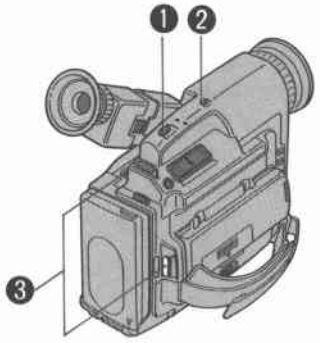
Notes:

- After 40 seconds of recording, the asterisk disappears from the viewfinder and the edit-erase function no longer operates.
- The edit-erase function cannot be used if the OPERATE button is operated or record search is used less than 40 seconds after recording began (the asterisk disappears from the viewfinder).
- The edit-erase function can only be used with CAMERA mode in record pause. It cannot be used in PLAY mode.

Blank Tape Search (Play Mode)

The blank tape search function can be used to quickly locate the end of the recorded section of tape. This is useful when you want to continue recording on a partially recorded tape. This function only operates during PLAY mode.

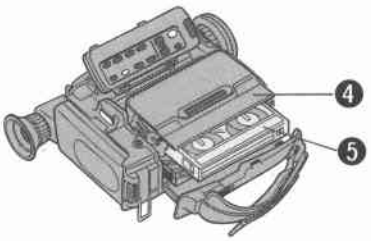
❶ **MODE SELECT Button**
❷ **BLANK TAPE SEARCH Button**
❸ **Start/Stop Buttons**
❹ **Video Cassette Compartment**
❺ **Video Cassette**



1. **Press MODE SELECT button to select PLAY mode.**
   - PLAY indicator (green) lights up.

2. **Load partially recorded video cassette tape.**

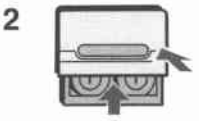
3. **Press BLANK TAPE SEARCH button.**
   - Camera enters high-speed search to find end of recorded section. When it is found camera enters still playback mode.
   - Final frame is displayed as a still image for about 5 minutes, then camera enters stop mode.
   - Recordings can be monitored through the viewfinder during blank tape search operation.

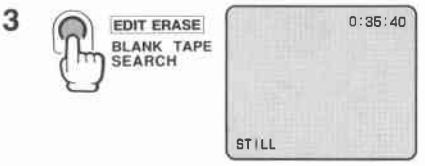


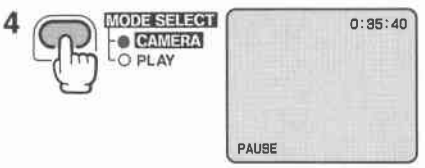
To continue recording:

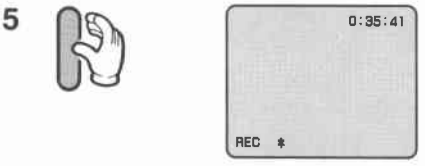
4. **Press MODE SELECT button to select CAMERA mode.**
   - Camera switches from still playback mode to record pause mode.
   - CAMERA indicator (red) lights up.

5. **Press start/stop button to begin recording.**
   - You will obtain a clean transition between the previously recorded and the new scene.
   - To cancel blank tape search function, press ■ (STOP) button.









Notes:

- Even when the BLANK TAPE SEARCH button is pressed while at a non-recorded section, the end of the recorded section is searched and the camera enters the still playback mode.
- When the blank tape search function is used on a video cassette with no blank section, the camera enters high-speed search mode to the end of the tape and stops. "T. END" appears in the viewfinder.
- The blank tape search function detects blank sections which are at least approximately 50 seconds in SP mode (1 minute and 40 seconds in LP mode) in length. If the tape has such blank sections in the middle of recorded sections, the camera will stop when it detects them. In this case, use fast forward playback (see p. 52) to move through the blank section and then use blank tape search again or record search (see p. 38).
- The last frame is displayed in the viewfinder for about 5 minutes as a still image. Then the camera enters the stop mode to protect internal parts from damage.
- When using the blank tape search function to continue recording on a partially recorded tape, make sure that the erasure prevention switch is in the recording possible position.
- When the blank tape search function is used, the very end of the previously recorded scene may be erased when recording is resumed.

Playback Connection (PLAY Mode)

To play back a recorded video cassette on a TV, use either the DC-100 DC Coupler and CA-100 Compact Power Adapter (or CB-110 Car Battery Adapter) or the BP-E77K Battery Pack as a power source. For details on how to connect the CA-100 (or CB-110) and DC-100 to the camera, see page 20.
The procedure for connecting the video camera to your TV varies depending on the type of TV. Follow the appropriate connection procedure described below and on the following pages.
• Turn camera off when connecting.

The connecting accessories included in the kit vary according to areas. Use the following chart to determine what your kit should contain:

	EUROPE, etc.	UK, etc.	ASIA, OCEANIA, LATIN AMERICA, etc.
PC-170ST Stereo SCART Cable	1	—	—
RU-100 RF Unit	—	1	—
C-150 AV Cable	—	—	1
ST-150 Stereo Cable	—	1	1

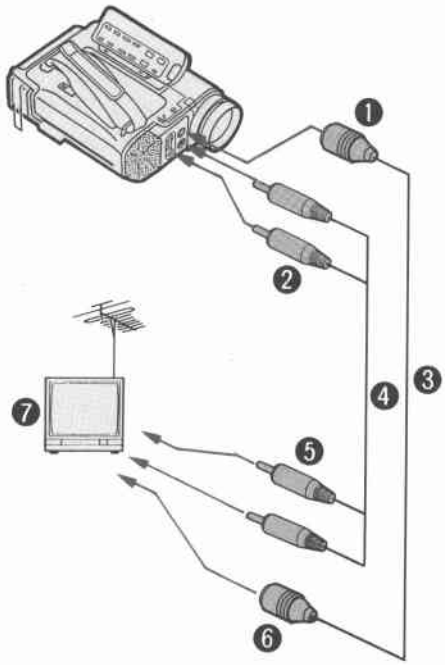
Using TV with S-video Input Terminal

Stereo [1]

Connect S-video/audio terminals of camera to S-video/audio terminals of TV using the S-150 S-video Cable and stereo cable.
• This procedure can also be used to connect camera to a VTR which has S-video input terminal.

❶ **To S-video Terminal**
❷ **To Audio Terminals (Ⓛ white = left; Ⓡ red = right)**
❸ **S-150**
❹ **Stereo Cable (white = left; red = right)**
❺ **To Audio Input Terminals**
❻ **To S-video Input Terminal**
❼ **TV: Set TV/VIDEO Selector to VIDEO**

[1]



Using TV with Audio/Video Input Terminals

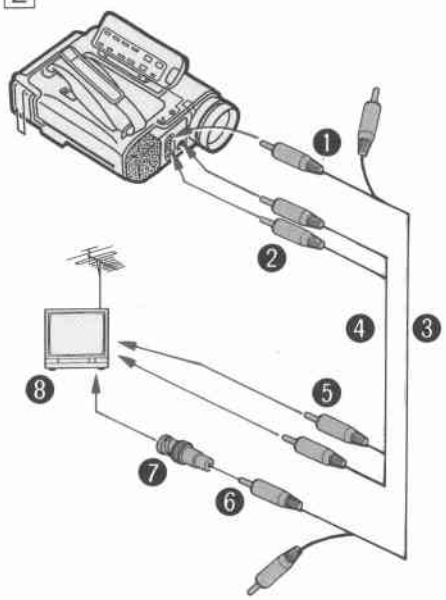
Stereo [2]

Connect audio/video terminals of camera to stereo audio/video input terminals of TV using a stereo cable and the C-150 AV Cable.
• This procedure can also be used to connect camera to a VTR which has audio/video input terminals.

❶ **To Video Terminal (yellow)**
❷ **To Audio Terminals (Ⓛ white = left; Ⓡ red = right)**
❸ **C-150 [yellow = video; white (or black) plug is not used]**
❹ **Stereo Cable (white = left; red = right)**
❺ **To Stereo Audio Input Terminals**
❻ **To Video Input Terminal**
❼ **BNC Adapter***
❽ **TV: Set TV/VIDEO selector to VIDEO**

* If TV has a BNC-type video input terminal, attach a commercially available BNC adapter to C-150 AV cable.

[2]



Using TV with Audio/Video Input Terminals

Monaural

Connect audio (L)/video terminals of camera to audio/video terminals of TV using the optional C-150 AV Cable [white (or black) = audio; yellow = video].

- If connected only to Audio Ⓛ Terminal, L+R monaural signal is output.

Using TV with SCART Terminal

Stereo **S-video** 3

Connect audio/video terminals of camera to SCART terminal of TV using the PC-270SST S-stereo SCART cable.

❶ **To S-video Terminal**
❷ **To Audio Terminals (Ⓛ white = left; Ⓡ red = right)**
❸ **PC-270SST S-stereo cable**
❹ **To SCART Terminal**

Stereo 4

Connect audio/video terminals of camera to SCART terminal of TV using the PC-170ST Stereo SCART Cable.

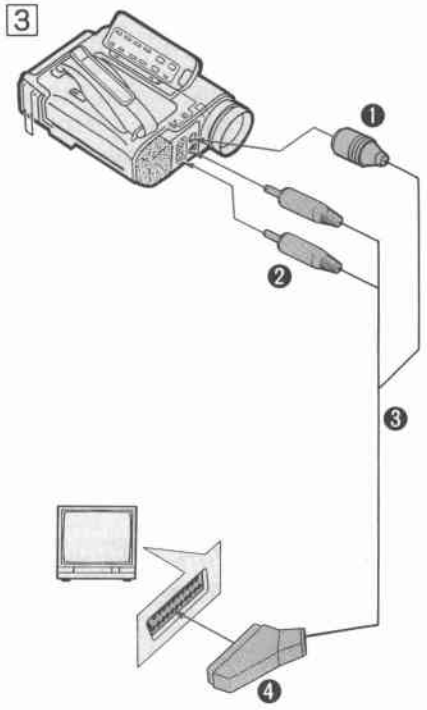
❶ **To Audio Terminals (Ⓛ white = left; Ⓡ red = right)**
❷ **To Video Terminal (yellow)**
❸ **PC-170ST**
❹ **To SCART Terminal**

Monaural

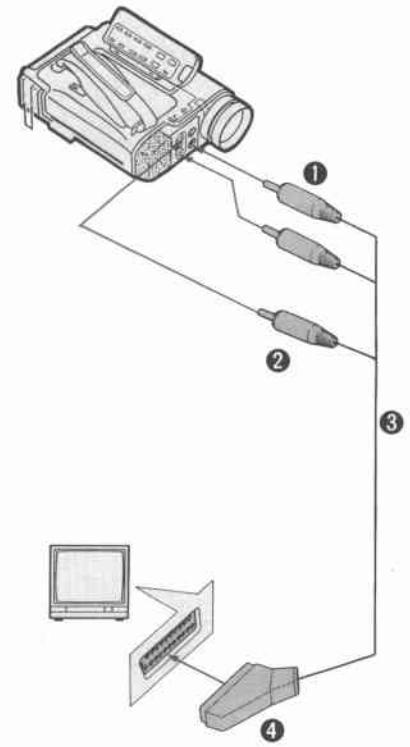
Connect audio/video terminals of camera to SCART terminal of TV using the PC-150 SCART Cable.

- If connected only to Audio Ⓛ Terminal, L + R monaural signal is output.

3



4



Using TV without Audio/Video Input Terminals

The RU-100 RF Unit is required in order to view recorded video cassettes on a TV which does not have audio/video input terminals. There are two models of RU-100, one for Europe and one for Australia. The connection and setting procedures for the European and Australian models differ.

European Model 5

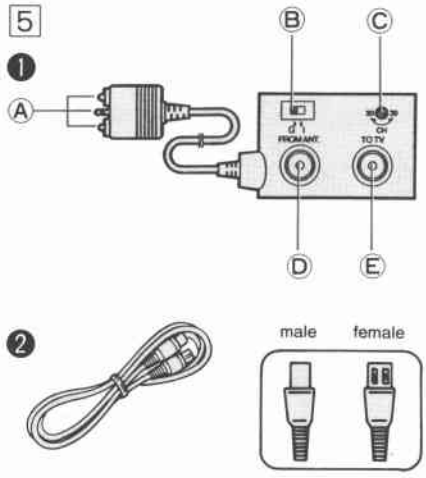
❶ **RU-100 (Provided for UK models)**
- Ⓐ **Connection Plug**
- Ⓑ **G/I Selector**
- Ⓒ **Video Channel Selector**
- Ⓓ **FROM ANT. Terminal**
- Ⓔ **TO TV Terminal**

❷ **Coaxial Cable with DIN-Connectors**

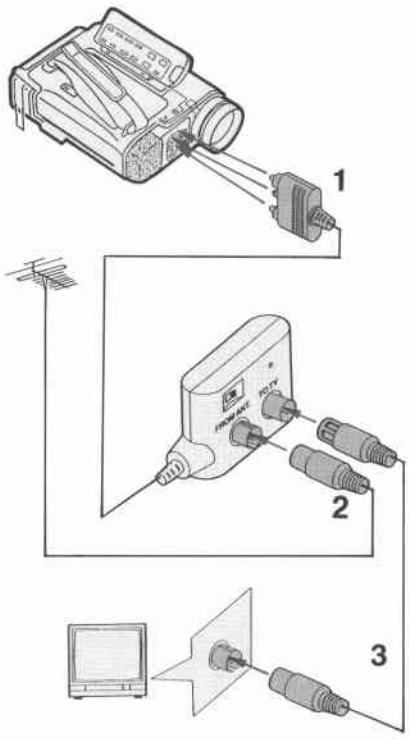
Connection Procedure 6

1. **Connect RF unit to camera.**
2. **Connect aerial cable to FROM ANT. terminal of RF unit.**
3. **Note the difference between 'male' and 'female' type DIN-connectors on coaxial cable. Connect female connector to TO TV terminal of RF unit. Connect male connector to aerial input terminal of TV.**

5



6



Selecting Video Channel [7]

Video channel means the channel in your area which is not used by a broadcasting station (channels 30-39). If your TV does not have audio/video input terminals, your TV and the video channel selector of the RU-100 RF Unit must be set to the video channel in order to view playback.

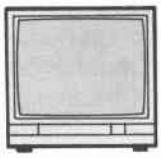
1. **Turn TV on.**
2. **Turn camera on and start playback (see p. 50).**
3. **Set RF unit's G/I selector using a flat-edge screwdriver.**
   G: Continental Europe
   I: England, South Africa, Hong Kong
   - If G/I selector is set improperly, picture will appear, but no sound will be heard.
4. **Set TV and video channel selector to video channel. For example, if video channel in your area is channel 33, tune TV to channel 33, then use a flat-edge screwdriver to set video channel selector of RU-100 to CH 33, adjust by turning until picture is clear.**
   - The RU-100 RF Unit is shipped from the factory with the video channel selector set to channel 32.

To View a Regular TV Programme

The RU-100 RF Unit automatically selects the video camcorder signal whenever the video camcorder is connected to the TV through the RF unit and the video camcorder is turned on. To view a regular TV programme, disconnect the video camcorder from the RF unit, or turn the video camcorder off.

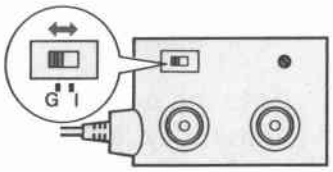
[7]

1

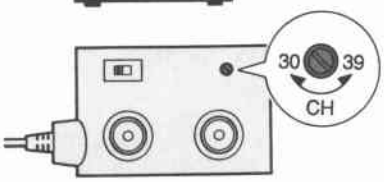


2

3



4



Australian Model 8

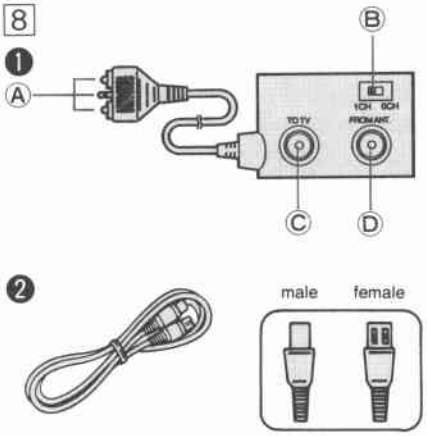
❶ **RU-100**
- Ⓐ **Connection Plug**
- Ⓑ **Video Channel Selector**
- Ⓒ **TO TV Terminal**
- Ⓓ **FROM ANT. Terminal**

❷ **Coaxial Cable with DIN-Connectors**

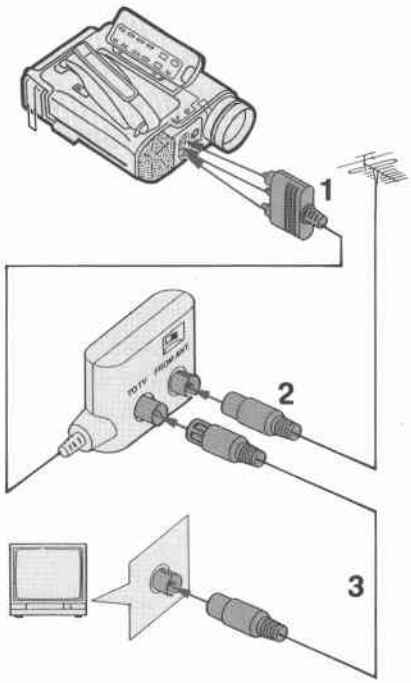
Connection Procedure 9

1. **Connect RF unit to camera.**
2. **Connect aerial cable to FROM ANT. terminal of RF unit.**
3. **Note the difference between 'male' and 'female' type DIN-connectors on coaxial cable. Connect female connector to TO TV terminal of RF unit. Connect male connector to aerial input terminal of TV.**

8



9



Selecting Video Channel [10]

Video channel means the channel in your area which is not used by a broadcasting station (Channel 0 or 1). If your TV does not have audio/video input terminals, your TV set and the video channel selector of the RU-100 RF Unit must be set to the video channel in order to view playback.

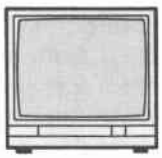
1. **Turn TV on.**
2. **Turn camera on and start playback.**
3. **Set TV and video channel selector to video channel. For example, if video channel in your area is channel 0, set video channel selector of RU-100 to CH 0 (using a flat-edge screwdriver), then tune TV to channel 0.**

To View a Regular TV Programme

The RU-100 RF Unit automatically selects the video camcorder signal whenever the video camcorder is connected to the TV through the RF unit and the video camcorder is turned on. To view a regular TV programme, disconnect the video camcorder from the RF unit, or turn the video camcorder off.

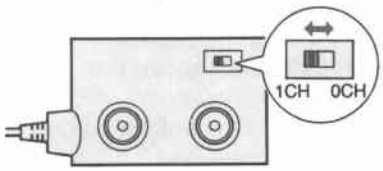
[10]

1



2

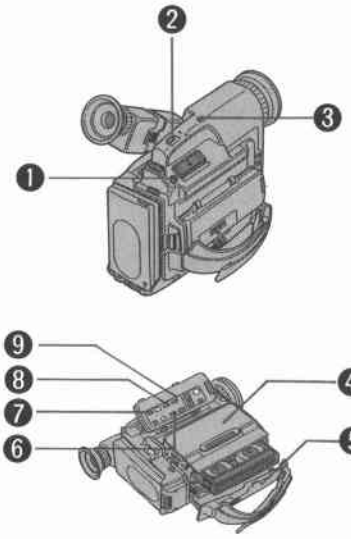
3



Playback Procedure (PLAY Mode)

Before playback, make sure that all connection procedures are completed (pp. 44-49).

❶ **OPERATE Button**
❷ **MODE SELECT Button**
❸ **PLAY Indicator (green)**
❹ **Video Cassette Compartment**
❺ **Video Cassette Compartment Cover**
❻ **STOP ■ Button**
❼ **REW/ ⏪ Button**
❽ **PLAY ▶ Button**
❾ **FF/ ⏩ Button**



Positioning the video camera

For playback on a connected TV, position video camera with the hand grip and wireless controller on top and use the operating buttons on the wireless controller.

- When changing video cassettes during playback, open video cassette compartment cover.
- To operate the camera, the remote sensor must receive the infrared signals emitted when the wireless controller operating buttons are pressed.
  To facilitate reception, point the attached wireless controller's transmitter at a wall, or place a stack of magazines near the wireless controller.

1. Turn camera on.

- CAMERA indicator (red) lights up.

2. Press MODE SELECT button to select PLAY mode.

- You must complete this step to begin playback.
- CAMERA indicator goes off, PLAY indicator (green) lights up and the connected TV monitor appears blue.

3. Load video cassette in camera.

- For loading procedure, see page 27.

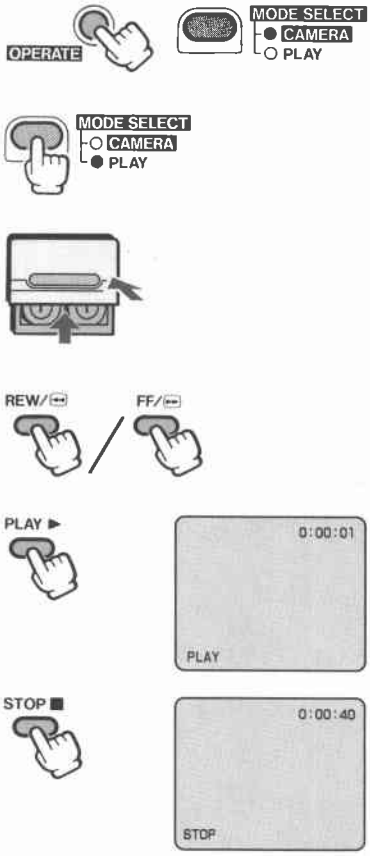
4. Locate playback starting point.

- Use FF/ ⏩ or REW/ ⏪ buttons to locate starting point or use fast forward/rewind playback or high-speed search (see p. 52).

5. Press PLAY ▶ button to start playback.

- You can monitor playback in viewfinder.

6. Press STOP ■ button to end playback.



Explanation:

High-Frequency Feedback

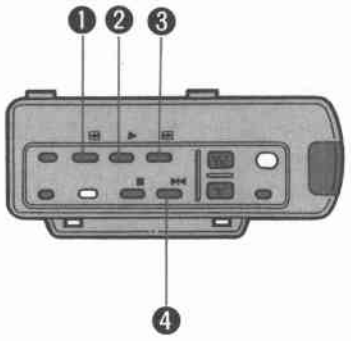
High-frequency feedback is a high-pitched squeal that occurs when the sound from the TV speaker is picked up by camera microphone.

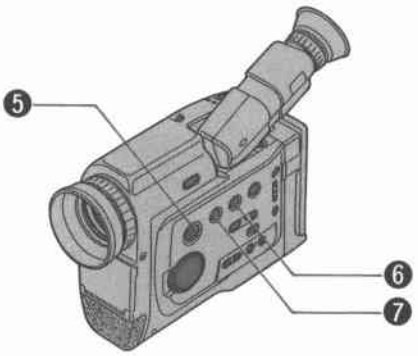
- During CAMERA mode, high-frequency feedback may occur if camera microphone is too close to TV speaker. To prevent feedback, turn down TV volume when camera is connected, and keep microphone pointed away from TV speakers.
- Feedback will not occur when PLAY mode is selected.

Special Playback Methods (PLAY Mode)

In addition to normal playback, the camera also has fast forward, rewind and still playback. Playback is controlled by pressing the buttons on the camera or by using the wireless controller attached to or detached from the camera.

❶ **REW/ ⏪ Button**
❷ **PLAY ▶ Button**
❸ **FF/ ⏩ Button**
❹ **STILL ▶⏸ Button**
❺ **▶ (Play) Button**
❻ **▶▶ (Fast Forward) Button**
❼ **◀◀ (Rewind) Button**





Fast Forward Playback [1]

Press and hold FF/ ⏩ button during normal playback to view scenes at about 7 times normal speed.
•Release button to resume normal playback.

Rewind Playback [2]

Press and hold REW/ ⏪ button during playback to view scenes in reverse at 5 times normal speed.
•Release button to resume normal playback.

Still Playback [3]

Press STILL ▶⏸ during playback to pause playback. Press STILL button once again, or press PLAY button, to resume normal playback.

High-Speed Search

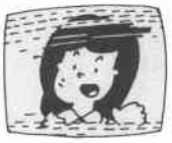
The high-speed search function plays back recorded scenes at about 11 times (SP mode) and 22 times (LP mode) the normal speed.
•Press and hold FF/ ⏩ button in fast forward mode for high-speed search in the forward direction.
Release FF/ ⏩ button to return to fast forward mode.
•Press and hold REW/ ⏪ button in rewind mode for high-speed search in reverse.
Release REW/ ⏪ button to return to rewind mode.

Notes:

- Several noise bars appear during special playback.
  - ❶ **During fast forward and rewind playback modes**
  - ❷ **During still playback**
- Audio portion of tape cannot be heard during special playback.
- Picture flickers during still playback.
- The camera automatically goes into stop mode after about five minutes of continuous still playback.
- When fast action scenes are shown in still playback, the picture may blur.
- Certain TVs may show the special playback picture in black and white, or picture may roll or divide.
- Notes about special playback of tapes recorded in SP:
  (1) The still playback picture will contain much more noise than for a tape recorded in LP.
  (2) During fast forward or rewind playback, noise bar will be much wider than for a tape recorded in LP.

❶

❷

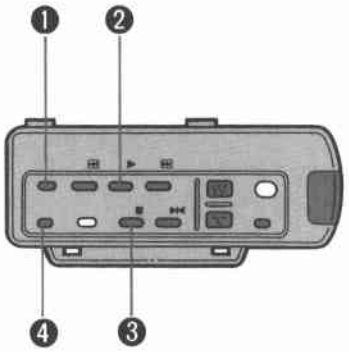


Tape Return (PLAY Mode)

The tape return function allows you to quickly return to a desired scene.

- The camera does not have a TAPE RETURN button. Use the WL-1 Wireless Controller to operate tape return.

❶ **TAPE RETURN Button**
❷ **PLAY ▶ Button**
❸ **STOP ■ Button**
❹ **C. RESET Button**

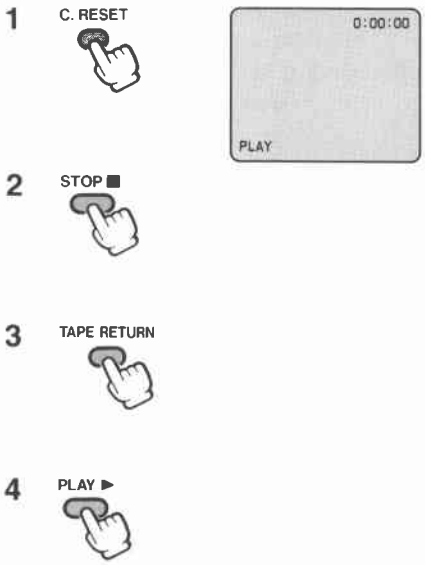


1. **During playback, press the C. RESET button if you locate a scene you wish to watch again later.**
   - The tape counter is reset to "0:00:00".

2. **Press STOP ■ button when playback finishes.**

3. **Press TAPE RETURN button.**
   - The tape rewinds and stops automatically when tape counter nears "0:00:00".

4. **Press PLAY ▶ button.**
   - Playback starts at the point where you pressed the C. RESET button.



Remark:
Each time a video cassette is loaded, tape counter is automatically reset to "0:00:00". Therefore the tape return function is a convenient way to locate the recording start point.

Notes:
- Press STOP button to cancel tape return.
- Tape counter reading is approximate. Use it only as a guide.
- When tape counter reading is near "0:00:00", TAPE RETURN button does not operate.
- You cannot use the tape return function in CAMERA mode.

Advanced Operations

Focusing (CAMERA Mode)

The camera has two focus modes: autofocus and manual focus. Each time the AF ON/OFF button is pressed, the selected mode changes as shown below.

Camera ON → Autofocus → Manual Focus

❶ AF ON/OFF Button
❷ Focusing Ring

Autofocus 1

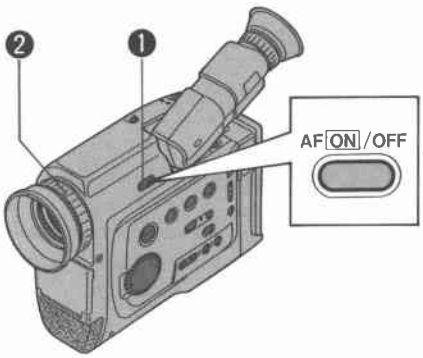
Autofocus mode is automatically selected when the camera is turned on and the PROGRAM AE selector is set to AUTO. The autofocus zone is in the centre of viewfinder. Subjects within this zone will be in sharp focus.
The camera is equipped with an internal-focus lens which provides an autofocus range from infinity to very close. Subjects can be approached to a distance of
- 1 centimetre with the maximum wide-angle end.
- 80 centimetres with the maximum telephoto end for recording.

❸ Autofocus Zone

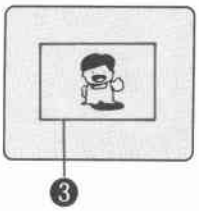
Notes:
- Dirt or dust on the surface of the lens may affect autofocus performance. Clean the lens periodically to maintain optimum autofocus performance.
- Sharp focusing may be difficult if the subject in the autofocus zone is small. The subject should fill the autofocus zone where possible.
- Focus mode is automatically memorized when PROGRAM AE selector is on MANUAL setting. Camera will return to same focus mode when PROGRAM AE selector is set back to MANUAL, even though focus mode may have been changed in the meantime.

Changing the Focus Set by Autofocus 2

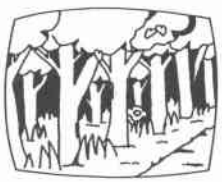
In autofocus mode the camera focuses on the subject with the highest contrast. If several high contrast subjects are within the autofocus area, only one of them may be in focus. To focus on other subjects, rotate the focusing ring to adjust the focus. During this time, autofocus stops operating temporarily but resumes operation when focusing ring is released. This may also be done in cases where the subject is a continuous line and you wish to focus on a particular spot. A sharper focus can be obtained.



1



2



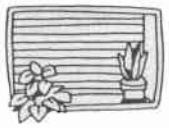
Subjects Not Suitable for Autofocus [3]

Autofocus may not work well in the following instances, and manual focus will probably give you better results:

1. Shiny subjects or subjects that reflect light
2. Horizontally striped subjects
3. More than one subject in viewfinder/different distances
4. Rapidly moving subjects
5. Slanted subjects
6. Subjects with little or no contrast (a white wall, for example)
7. Subjects behind glass (windows with water or dirt on them)
8. Dark subjects
9. Night scenes

[3]

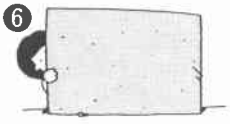
1

2


3

4

5

6


7

8

9

Manual Focus [4]

Manual focus is used for recording subjects not suitable for autofocus.

❶ **Focusing Ring**
❷ **AF ON/OFF Button**
❸ **Zoom Buttons**

1. Press zoom buttons to obtain the desired picture angle.

- Using the zoom after having used the manual focus may cause the picture to become out of focus. Therefore, zoom first, then focus.
- For zooming, see page 59.

2. Press AF ON/OFF button.

- The autofocus zone disappears from viewfinder.
- Subjects which were in focus remain locked in focus.

3. Rotate focusing ring to focus on subject to be recorded.

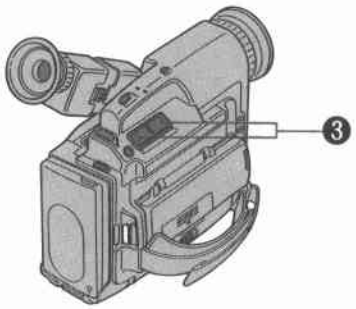
4. Press AF ON/OFF button to cancel manual focusing.

- The autofocus zone reappears in viewfinder and autofocus resumes.

Notes:

- When the PROGRAM AE selector setting is other than MANUAL, turning the power off or changing to PLAY mode will cause the camera to revert automatically to autofocus.
- Manual focus should be used when using the optional FS-37 Filter Set.
- When PROGRAM AE selector is switched from MANUAL to AUTO, camera automatically returns to autofocus mode.

[4]



1

2

3

4

Zooming (CAMERA Mode)

The camera is equipped with 10× zoom lens. The zoom function enables the picture angle to be changed freely from wide angle to telephoto.

Power Zoom [1]

❶ Power Zoom Buttons

Power zoom buttons are on top of camera.
- Press W to gradually zoom out to wide angle.
- Press T to gradually zoom in to telephoto.

❷ Zoom in
❸ Zoom out

- Zoom lens position display "∗" appears in viewfinder. Zooming direction is also indicated by < (zoom in) and > (zoom out).

❹ Zoom Lens Position Display

Wireless Zoom [2]

❺ ZOOM Buttons

For remote control of the zoom function, use the ZOOM buttons on the wireless controller.
- Press W to gradually zoom out to wide angle.
- Press T to gradually zoom in to telephoto.

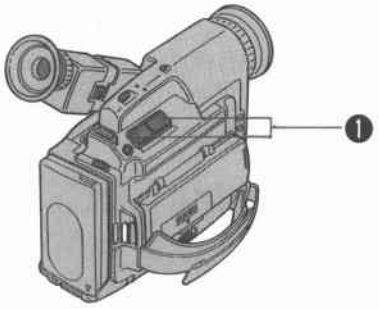
Hints:
- It is recommended that the camera be mounted on a tripod for telephoto recording since any hand movements are magnified.
- Use a TV monitor during wireless zooming to view shots.
- Overuse of zooming may make recordings seem too busy. Selective use of zooming is more effective.
- This camera is equipped with 2-speed zooming control. During record pause mode, use T or W power zoom buttons as described below:
  Press T or W button halfway. Zooming will occur slowly.
  Press T or W button all the way down. Zooming will occur quickly.
  During recording, slow zooming will be selected.

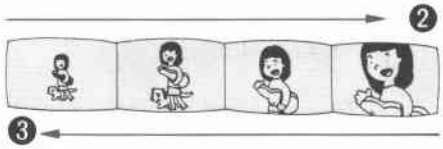
Zooming and Minimum Shooting Distance [3]

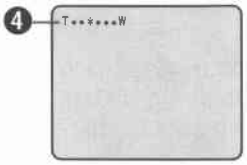
The internal-focus lens causes the minimum shooting distance (how close the camera can be brought to a subject), to change with the zoom position.
- With the widest angle, shooting is possible at about 1 centimetre.
- With the greatest telephoto zoom the minimum distance is about 80 centimetres.

Notes:
- If the zoom is used with the manual focus (see p. 58), the set focus may be lost.
- A subject closer than about 1 metre may become out of focus when the zoom is used.

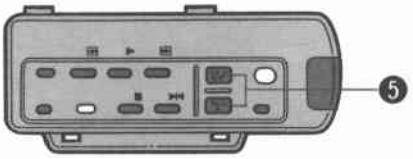
[1]



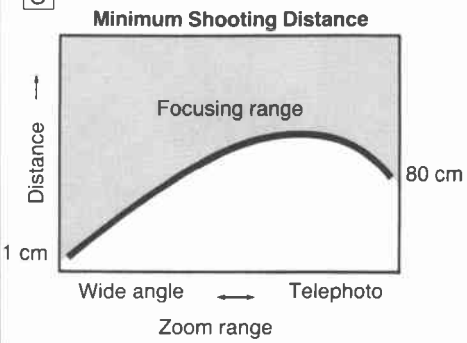




[2]



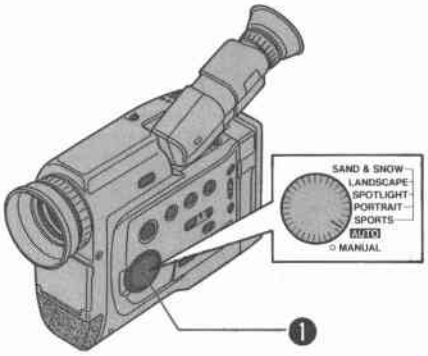
[3]



Program AE (CAMERA Mode)

The PROGRAM AE selector puts advanced recording techniques at your fingertips with seven different modes including AUTO and MANUAL, for best possible results in all recording situations.

❶ **PROGRAM AE Selector**



Recording with Program AE Functions

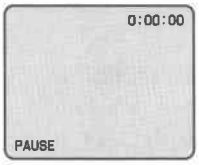
1. **Place camera in record pause mode.**

2. **Set PROGRAM AE selector to desired mode.**
   - Selected mode is displayed in viewfinder except for MANUAL mode.

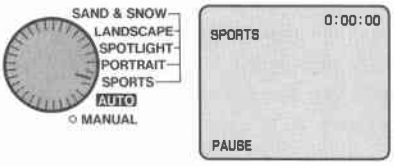
3. **Press start/stop button to start recording.**

Notes:
- When recording is complete, set PROGRAM AE selector to AUTO.
- When switching modes using the selector, image brightness may change suddenly. Do not switch modes while recording.
- When recording bright lights or reflections, a smear effect may occur.
- Flicker may occur with some sources of illumination.

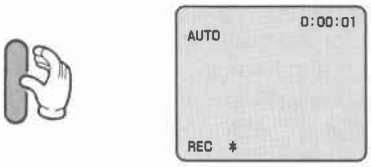
1



2



3

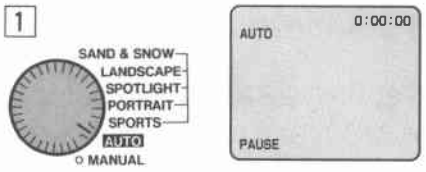


To Record Ordinary Scenes 1

Set PROGRAM AE selector to AUTO.

- "AUTO" is displayed in the viewfinder.
- Set PROGRAM AE selector back to AUTO after you finish recording with another mode.

In AUTO mode, the shutter speed and iris are automatically adjusted to the recording scene. This mode compensates for some backlighting and is ideal for general recording.

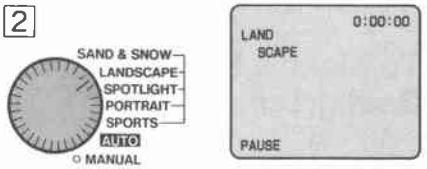


To Record Well-exposed Landscapes 2

Set PROGRAM AE selector to LANDSCAPE.

- "LANDSCAPE" is displayed in viewfinder.

Normally, when recording with a bright sky in the background, the land in the landscape turns out too dark. In LANDSCAPE mode, the iris is automatically adjusted to prevent this.
Use this mode to obtain well-exposed recordings of landscapes or buildings against a bright upper half of the scene.

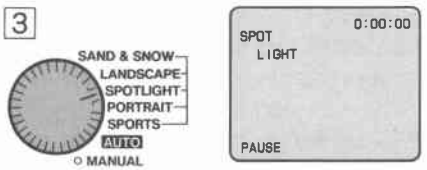


To Record a Spotlit Scene More Effectively 3

Set PROGRAM AE selector to SPOTLIGHT.

- "SPOTLIGHT" is displayed in viewfinder.

In SPOTLIGHT mode, the iris is automatically adjusted for effective, glare-free recordings of scenes illuminated by spotlights or other concentrated light sources.
Use this mode when recording spotlit scenes such as on a stage.



To Record a High-Speed Scene Clearly 4

Set PROGRAM AE selector to SPORTS.

- "SPORTS" is displayed in viewfinder.

In SPORTS mode, the shutter speed and iris are automatically adjusted for clear recordings of rapidly moving subjects. This mode is ideal for recording high-speed sports sequences like golf and tennis or for recordings you want to play back for form analysis on a VTR with a noise-free still playback function.

Notes:

- In SPORTS mode, a high shutter speed is selected. Use this mode outdoors, in bright light.
- SPORTS mode is especially designed for still playback or slow playback. Scenes will appear somewhat jerky during normal playback.

To Make a Subject Stand out against the Background 5

Set PROGRAM AE selector to PORTRAIT.

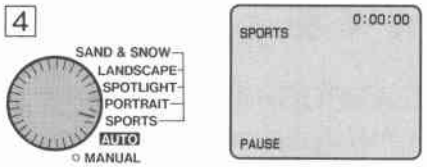
- "PORTRAIT" is displayed in viewfinder.

In PORTRAIT mode, the shutter speed and iris are automatically adjusted so that the subject stands out amid a softened foreground and background. Since a large iris is selected, the in-focus area becomes shallower.
Use this mode outdoors to make the subject stand out. This mode also works well for slow moving subjects, still lifes and close-ups such as plants.

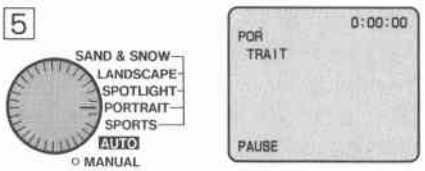
Hints:

- This softend effect is strongest when the zoom position is between middle range and telephoto end. Conversely, it becomes weaker as the zoom is shifted from middle range to the wide-angle end.
- The in-focus area becomes shallower in this mode. Use manual focus for better accuracy.

4



5



To Record Bright Scenes More Effectively (Beach or Snowy Location) 6

Set PROGRAM AE selector to SAND & SNOW.

- "SAND & SNOW" is displayed in viewfinder.

In SAND & SNOW mode, the shutter speed and iris are automatically adjusted for clear recordings with no underexposure of the subject due to an excessively bright background such as a summer beach or a snowy ski resort. Use this mode in locations with strong light reflection to obtain clear recordings and optimum exposure of the subject.

Notes:

- If using this mode in dark locations such as under a cloudy sky or in the shade, the subject may become too bright.
- Since the high-speed shutter is selected, the subject's movements may not appear smooth during playback.

To Make Recordings with Your Own Settings 7

Set PROGRAM AE selector to MANUAL.

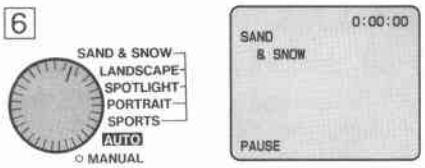
- There is no mode indication displayed in viewfinder.

In MANUAL mode, the shutter speed, exposure control, white balance and gain-up can all be set as desired. For example, you can use this mode to adjust exposure compensation for artistic under- or overexposure (see p. 64).

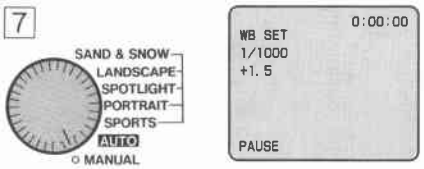
Notes:

- Settings made in MANUAL mode for the shutter speed, exposure control, white balance and gain-up are all memorized even when the camera is turned off.
- Selection of the autofocus mode in MANUAL mode with the AF ON/OFF button (auto/manual) is also memorized.

6



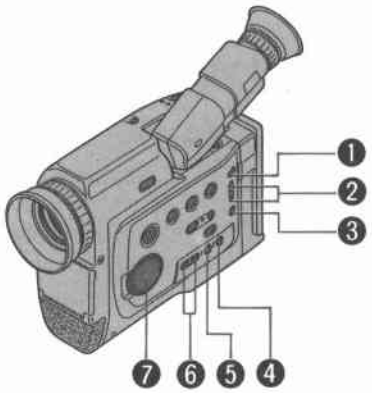
7



MANUAL Mode

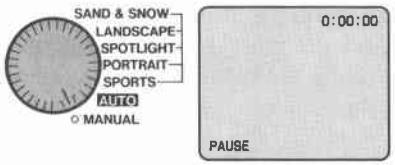
Freely combine shutter speed, exposure control, white balance, and gain-up to suit the recording conditions for creative personalized recordings.

❶ **MENU Button**
❷ **+/– Buttons**
❸ **SELECT Button**
❹ **SHUTTER Button**
❺ **W. BAL Button**
❻ **EXP CONTROL Buttons**
❼ **PROGRAM AE Selector**



1. Set PROGRAM AE selector to MANUAL.

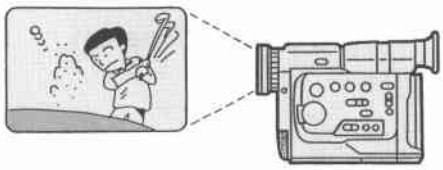
1



2. While monitoring the subject in viewfinder, make following settings:

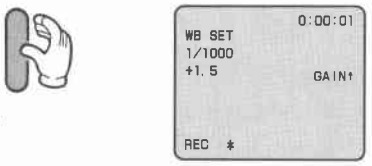
- **Changing shutter speeds:** Press SHUTTER button to select speed (see p. 65).
- **Changing Exposure:** Press EXP CONTROL buttons + or – (see p. 68).
- **Increasing Sensitivity:** Press MENU button to display MENU 1. Select GAIN UP. "GAIN ↑" appears in viewfinder (see p. 71).
- **Setting White balance:** Press W. BAL button (see p. 66).

2



3. Press start/stop button to start recording.

3



Note:

- When recording in MANUAL mode, be sure to monitor subject in viewfinder. After recording, use record review function to check recordings.

Mode Memory

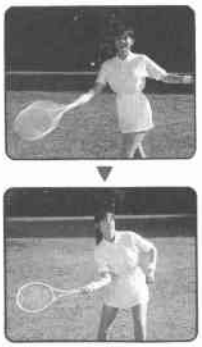
The following modes set in MANUAL mode are memorized even when the power is turned off.

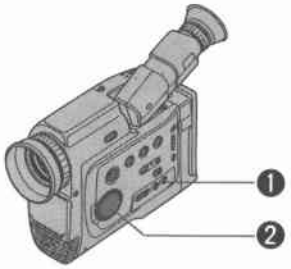
- Shutter speed
- Exposure control
- Gain-up
- White balance set
- Focus mode (Autofocus/Manual focus)

High-Speed Shutter (CAMERA Mode)

The high-speed shutter is useful for recording fast moving subjects clearly and for shooting sports. (When played back on a VTR with fine still and fine slow functions, little noise or blur will occur.)
The camera has 7 high-speed shutter settings: 1/120th, 1/250th, 1/500th, 1/1000th, 1/2000th, 1/4000th and 1/10000th of a second. Select the shutter speed that suits the speed and brightness of the subject.

❶ **SHUTTER Button**
❷ **PROGRAM AE Selector**





1. Set PROGRAM AE selector to MANUAL.

2. Point camera at subject and compose scene in viewfinder.

3. Press SHUTTER button.

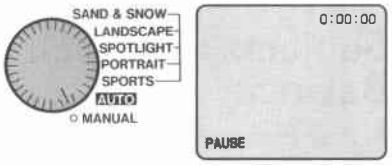
- Each time SHUTTER button is pressed, shutter speed display in viewfinder changes as follows:

no display → 1/120 → 1/250 → 1/500 → 1/1000
1/10000 ← 1/4000 ← 1/2000

4. Begin recording.

Notes:
- High shutter speeds require more light. For best results use outdoors in bright places.
- Scenes shot with the high-speed shutter will appear somewhat jerky during normal playback.
- Scenes shot with the high-speed shutter will shudder during still playback.
- High-speed shutter settings are memorized even when camera is turned off.
- When a bright object is shot with the high-speed shutter, a smear may occur.

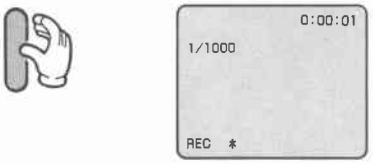
1



2

3

4



White Balance (CAMERA Mode)

What is White Balance?

The human eye can perceive a white object as white, regardless of the lighting conditions. With video cameras, however, the colour temperature of the light source may cause the colour of the recorded picture to be different from the actual colour. White balance is the adjustment made, when recording, to make white subjects look white and to obtain natural colours under a variety of light sources. The camera has two systems for white balance adjustment: auto and set.

Explanation:
Colour temperature, measured in kelvin (K), indicates the relative redness or blueness of a light source and is not directly related to brightness. A light source with a red cast has a low colour temperature, whereas a bluish light source has a higher colour temperature.

Auto White Balance

The camera's auto white balance system divides the screen into 24 sections and individually evaluates them to achieve the optimum white balance. A natural colour balance is automatically set for sunlight and indoor lighting conditions.

Subjects not Suitable for Auto White Balance

Auto white balance may not operate well in the following circumstances and white balance set will probably give better results:

❶ Subjects with one dominant colour, such as sky, sea or forest.
❷ Close-ups
❸ Rapidly changing lighting conditions.
❹ When recording under certain types of fluorescent or mercury vapor lights.

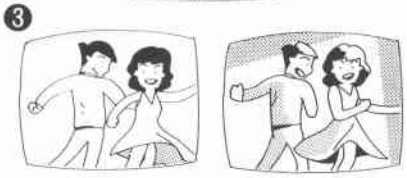
Colour Temperature Chart

Adjustable White Balance Range	Bluish Cast	10,000 K	• Blue sky
		9,000 K	• Scene on TV screen
		8,000 K	• Cloudy sky
		7,000 K	
		6,000 K	• Sunlight
		5,000 K	
	White	4,000 K	• White-coloured fluorescent light • 2 hours after sunrise or before sunset • 1 hour after sunrise or before sunset • Electric halogen light
		3,000 K	• 30 miutes after sunrise or before sunset
	Reddish Cast		• White-coloured electric light bulb
		2,000 K	• Sunrise, sunset
		1,500 K	• Candlelight

❶

❷

❸

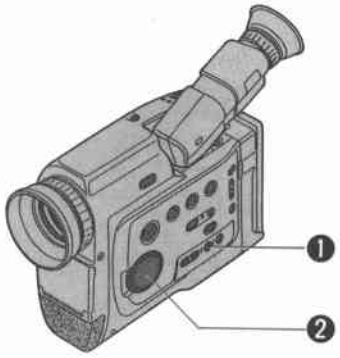


❹

White Balance Set

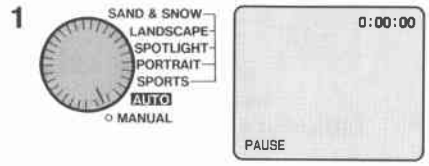
Use the white balance set when shooting subjects not suitable for auto white balance and in cases where a precise colour balance cannot be achieved with auto white balance.

❶ **W. BAL Button**
❷ **PROGRAM AE Selector**

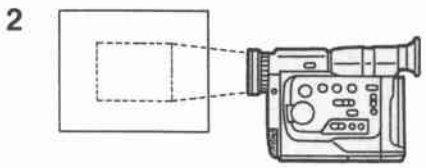


1. **Set PROGRAM AE selector to MANUAL.**

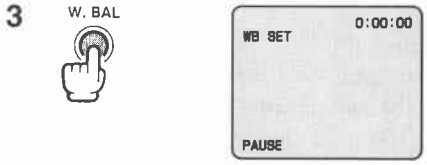
2. **Point camera lens at a white object (paper or cloth) so it completely fills viewfinder.**
   - Set zoom to telephoto end.
   - Focusing is not necessary.



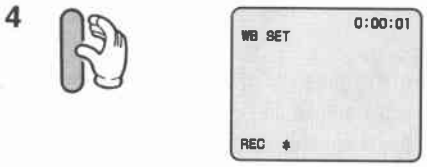
3. **Press W. BAL button.**
   - "WB SET" flashes in viewfinder, then appears steadily.

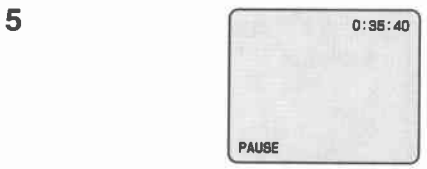


4. **Begin recording.**



5. **Press W. BAL button again to reset auto white balance. "WB SET" disappears from viewfinder.**
   - Auto white balance is reset.





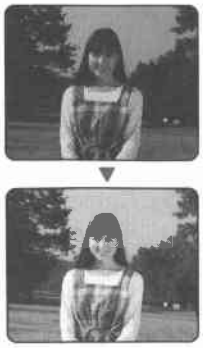
Hint:
- Use the white balance set to obtain more natural colouring even under normal conditions.

Notes:
- Use the white balance set in well lit places. If lighting conditions change, reset the white balance set.
- White balance set may not operate for certain light sources in which case "WB SET" continues flashing in viewfinder. In this case, use auto white balance.
- White balance settings are memorized even when camera is turned off.

Exposure Control

When recording under conditions where sudden changes in lighting may occur, or when you wish to adjust the exposure to suit your own tastes or artistic purposes, use exposure control.

❶ **EXP CONTROL Buttons**
❷ **PROGRAM AE Selector**



1. Set PROGRAM AE selector to MANUAL.

2. Press EXP CONTROL button +/−.

- Press + button for a brighter picture.
- Press − button for a darker picture.
- Exposure control display appears in viewfinder. Exposure control has three underexposure and four overexposure settings:

−1.5 ⇄ −1.0 ⇄ −0.5 ⇄ Normal ⇄ +0.5 ⇄ +1.0 ⇄ +1.5 ⇄ +2.0
(no display)

3. Make your recording.

4. To set the normal exposure, press the +/− buttons at the same time.

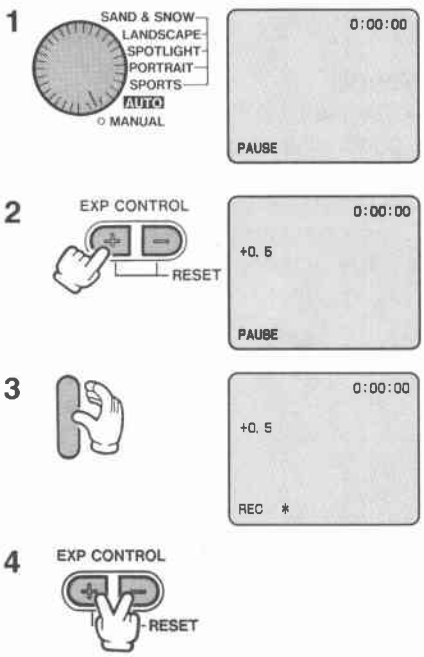
- The viewfinder display disappears and the exposure control setting returns to normal.
- Exposure control setting can also be cancelled by pressing the +/− buttons to return to normal.

Hint:

- In addition to changing the exposure control setting, the following methods can also be used to control backlighting.
  - ·Record closer to subject.
  - ·Use camera's zoom function to zoom in on subject.

Notes:

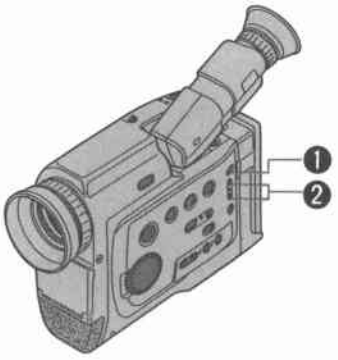
- If the picture angle is changed while recording a backlit scene, the exposure level may become unappropriate. Be sure to decide on the picture angle before adjusting the exposure control.
- Exposure control is memorized even when the camera is turned off.



Menu System

This menu system provides you with a wide variety of functions.
The buttons on the surface of the camera handle only frequently used basic functions. Advanced functions are selected from menus which appear in the viewfinder and are controlled by the MENU button.
There are four menus in CAMERA mode and one menu in PLAY mode.
When pressing the MENU button in CAMERA mode, four menus are displayed as follows.

→No display → MENU 1 → MENU 2 → MENU 3 → MENU 4 →



❶ **MENU Button**
❷ **+/− Buttons**

The functions below can be controlled from the various menus.

[CAMERA Mode]

MENU 1 [1]

(Display)	(Function)
GAIN UP	Gain-up (p. 71)
SELF	Self-timer (p. 72)
FADE-T	Fade trigger (p. 73)

MENU 2 [2]

DT TINT	Digital title see-through display (p. 79)
DT S/W	Digital title scroll/wipe display (p. 80)

MENU 3 [3]

MIC	Microphone angle (p. 88)
W. SCREEN	Auto wind screen on/off (p. 89)

MENU 4 [4]

SP/LP	Tape speed (p. 90)
TALLY	Tally lamp on/off (p. 91)
SENSOR	Remote sensor on/off (p. 92)

[PLAY Mode]

MENU [5]

BILINGUAL	Selecting bilingual soundtrack mode (p. 93)
EDIT	Edit on/off (p. 94)
SENSOR	Remote sensor on/off (p. 92)

- The remote sensor on/off function can be controlled either from MENU 4 (CAMERA mode) or from MENU (PLAY mode).

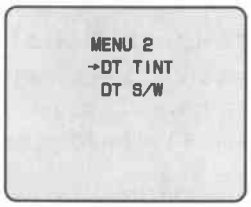
Use the MENU button to display the page containing the desired function. Then use the +/− buttons to align the arrow with the function.
- Press + button to lower the arrow.
- Press − button to raise the arrow.

Pressing the SELECT button allows a function setting to be changed or a function to be operated.

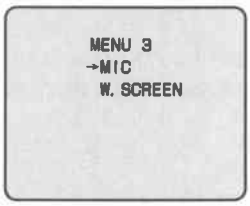
For further details, refer to the explanations of the various functions.

[1]

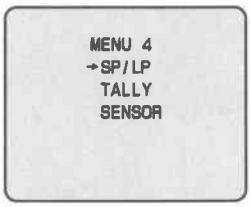
[2]



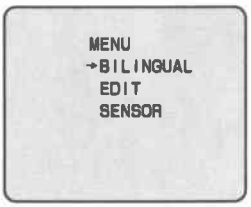
[3]



[4]



[5]



Automatic Systems During Menu Display

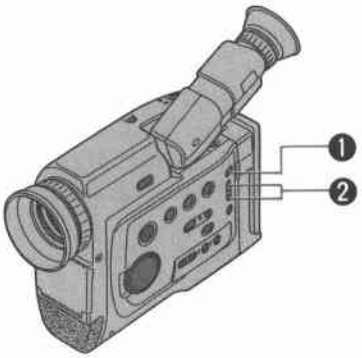
When the MENU button is pressed and a menu is displayed in the viewfinder, the automatic systems stop operating. When the menu is no longer displayed, the automatic systems resume operation.

Initializing the Menu Displays

The following procedure allows all menu functions to be reset to their original settings.

Date, time and stored digital titles, which are not items displayed on the menus, will not be affected by the following operation.

❶ **MENU Button**
❷ **+/– Buttons**



1

2

1. Press MENU button once.

- MENU 1 is displayed in viewfinder.

2. Press +/– buttons together.

- When in CAMERA mode, only CAMERA menu functions; and when in PLAY mode, only PLAY menu functions will be reset to their original settings.

Refer to pages 71-94 to set the necessary menu functions.

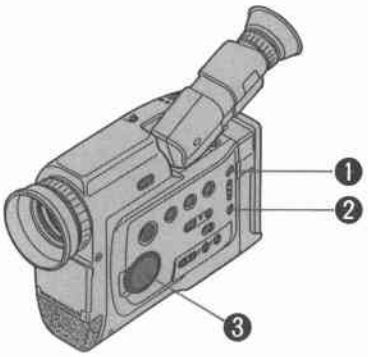
Hint:

- Some of the functions selected from the menus are memorized even after the power is turned off. (For details, see p. 26).

Gain-up (CAMERA Mode) MENU 1

The gain-up function increases the camera's sensitivity, allowing you to record in dimly lit locations without the use of video lights.

❶ **MENU Button**
❷ **SELECT Button**
❸ **PROGRAM AE Selector**



1. Set PROGRAM AE selector to MANUAL.

2. Press MENU button once.

- MENU 1 is displayed in viewfinder.
- Make sure the arrow is aligned with GAIN UP.

3. Press SELECT button.

- Gain-up function begins to operate.
- "GAIN ↑" is displayed in viewfinder.

4. Press MENU button four times.

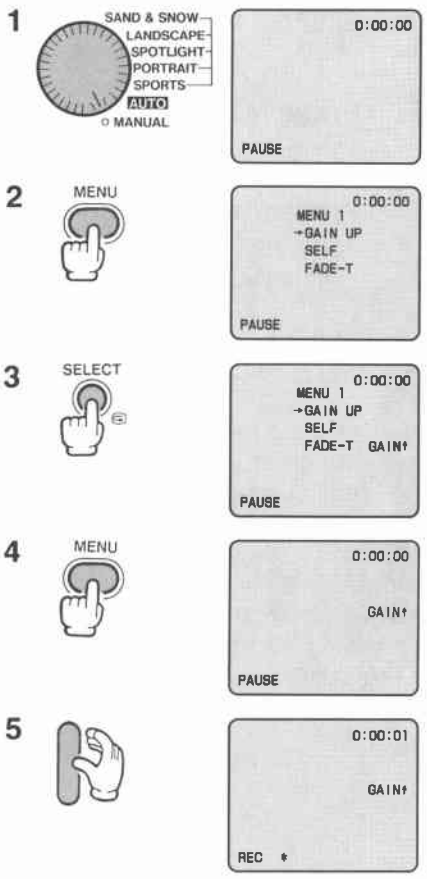
- Menu disappears from viewfinder.

5. Begin recording.

- To cancel gain-up function, repeat steps 1-4 and "GAIN ↑" will disappear from viewfinder.

Notes:

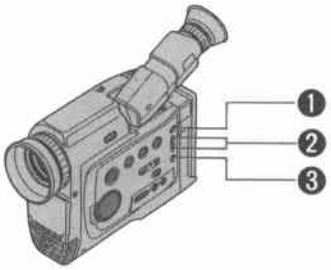
- Picture quality slightly decreases when the gain-up function is used.
- For recording in extremely dark locations, the gain-up function will not produce bright pictures. The use of the optional VL-20 Battery Video Light (see p. 104) is recommended for such occasions.
- Gain-up settings are memorized even when the camera is turned off.



Self-Timer Recording (CAMERA Mode) MENU 1

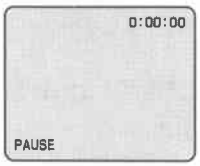
Set the self-timer and camera will automatically start recording after a 10-second standby period, letting you get in on the action.

❶ **MENU Button**
❷ **+/− Buttons**
❸ **SELECT Button**



1. Place camera in record pause mode.

1



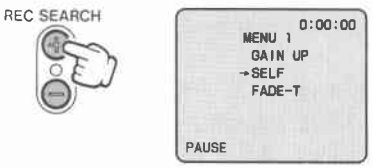
2. Press MENU button once.

- MENU 1 is displayed in viewfinder.

2

3. Use +/− buttons to align the arrow with SELF.

3



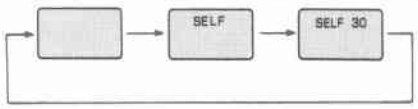
4. Press SELECT button to select self-timer mode.

- Each time SELECT button is pressed, timer mode display in viewfinder changes as follows:

→no display → SELF → SELF 30—

SELF: After 10 seconds standby, recording begins and continues.
SELF 30: After 10 seconds standby, recording begins and then pauses 30 seconds later.

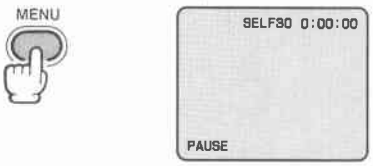
4



5. Press MENU button four times.

- Menu disappears from viewfinder.

5



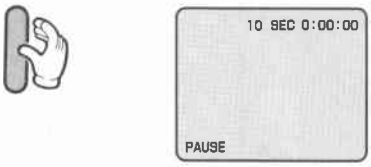
6. Press start/stop button.

- Countdown begins from 10 to 1 at about one-second intervals, then recording begins.

SELF: Timer is displayed.
SELF 30: Countdown begins from 30 to 1.

- During recording standby, tally lamp flashes slowly and begins to flash rapidly when recording begins.
- In the case of SELF, press start/stop button to stop recording.

6



Hints:

- Self-timer mode can be cancelled before recording begins by pressing start/stop button.
- The self-timer will cancel automatically after it has operated once.

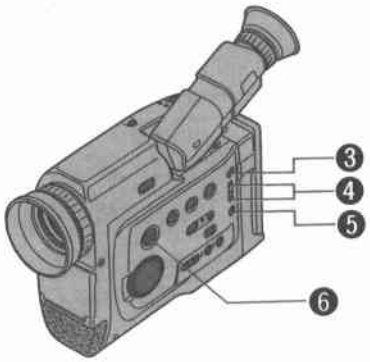
Fade (CAMERA Mode) MENU 1

The fade function allows you to make scenes gradually appear or disappear. This function is very effective for joining the beginnings and endings of scenes in smooth transition. There are two fade functions: fade trigger, controlled with the start/stop button and fade, controlled with the FADE button.

❶ **Fade In:** Scene gradually appears from a blank white screen.
❷ **Fade Out:** Scene gradually disappears, fading to a blank white screen.

Notes:
- Sound fades along with the image.
- Digital title and date/time displays do not fade.

❸ **MENU Button**
❹ **+/— Buttons**
❺ **SELECT Button**
❻ **FADE Button**

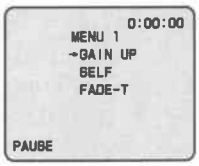


Selecting Fade Trigger Mode 1

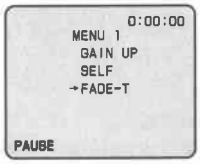
1. **Press MENU button once.**
   - MENU 1 is displayed in viewfinder.
2. **Use +/— buttons to align the arrow with FADE-T.**
3. **Press SELECT button.**
   - "FADE-T" appears in viewfinder.
4. **Press MENU button four times.**
   - Menu disappears from viewfinder.

1

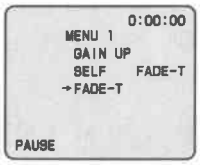
1 MENU



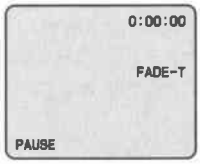
2 REC SEARCH



3 SELECT



4 MENU



To Start Recording with Fade In [2]

1. **During record pause mode, verify that "FADE-T" is displayed in viewfinder and press FADE button.**
   - The "T" of "FADE-T" flashes.

2. **Press start/stop button.**
   - The "T" of "FADE-T" stops flashing and appears steadily.
   - The image in viewfinder disappears immediately. Recording begins about 0.2 seconds later and scene fades in.

To End Recording with Fade Out [3]

1. **During recording, verify that "FADE-T" is displayed in viewfinder and press FADE button.**
   - The "T" of "FADE-T" flashes.

2. **Press start/stop button to place camera in record pause mode.**
   - The "T" of "FADE-T" stops flashing and appears steadily.
   - The image in viewfinder fades out. Camera goes into record pause mode about 5 seconds later.

- To cancel fade trigger mode, repeat steps 1—4 of "Selecting Fade Trigger Mode".
  - "FADE-T" disappears from viewfinder.

Notes:

- Once used, fade trigger standby is cancelled. Check the viewfinder display when using the fade trigger.

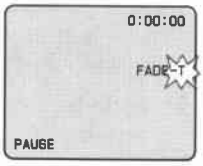
❶ **"FADE-T" is displayed..... When fade trigger mode is selected or during fade trigger operation.**

❷ **"T" of "FADE-T" flashes.. During standby**

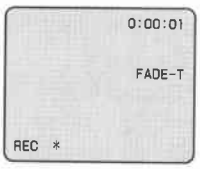
- Even if you turn the camera off or change to PLAY mode, this function will not be cancelled.
- If FADE button is pressed while in fade trigger mode, fade trigger will only go into standby position. It will not fade.

[2]

1

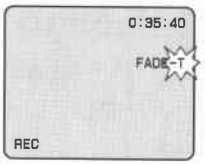


2

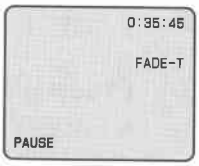


[3]

1

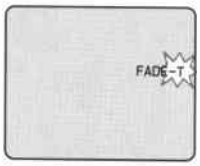


2



❶

❷



Fade In with Fade Button [1]

1. **Place camera in record pause mode.**
2. **Press and hold FADE button which makes scene disappear from viewfinder.**
3. **When scene has disappeared completely, keep pressing FADE button and press start/stop button to start recording.**
4. **Release FADE button.**
   - Scene gradually fades in.

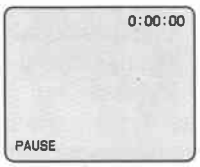
Fade Out with Fade Button [2]

1. **Press and hold FADE button during recording.**
   - Scene gradually fades out.
2. **Press start/stop button when scene has disappeared completely.**
   - Camera goes into record pause mode.
3. **Release FADE button.**

Hint:
- This function can be used at any time during recording.

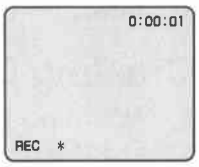
[1]

1



2

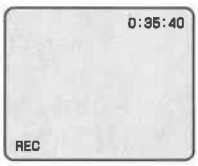
3



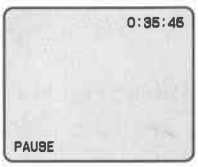
4

[2]

1



2

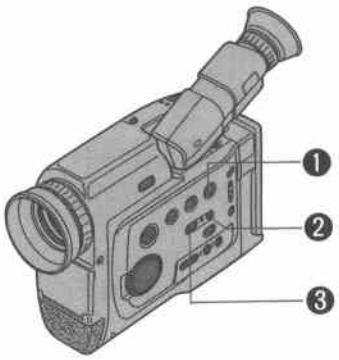


3

Adding Digital Titles to Recordings (CAMERA Mode)

The camera enables previously stored lettering and illustrations to be superimposed on scenes during recording. Two pages (2 full screens) of digital titling can be stored in the memory. The two digital titles can have different colours, shadow, and appear transparent. You can achieve an animation effect by alternately displaying two title pages (T1∗2) or combine two title pages by selecting simultaneous display (T1+2). They can be combined and/or scrolled or wiped in 4 directions to produce effective titles.

❶ **DISPLAY Button**
❷ **MODE/COLOR Button**
❸ **MEMO Button**



Creating Digital Titles [1]

1. With no title displayed, press MODE/COLOR button.

- Each time button is pressed, title memory/display mode display in viewfinder changes as follows. Select titles to be stored in memory.

→T1 → T2 → T1+2 → T1∗2 ┐

T1: Title can be stored in memory 1.
T2: Title can be stored in memory 2.
T1+2, T1∗2: Used only for title display.

2. Point camera at image to be stored and press MEMO button.

- The title is stored, and displayed on screen.
- In case the title cannot be stored clearly, see page 77.

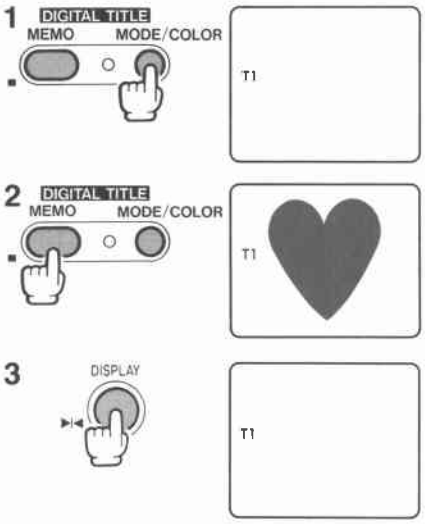
The stored title can be altered as follows:

Changing Colour/Reversing Title
Adding Shadow
See-through
Scroll/Wipe
Animated Title
↓
Selecting digital title for recording
Recording digital title

3. Press DISPLAY button.

- The stored title disappears from screen.
- Pressing DISPLAY button again recalls stored title.

[1]



Adjusting Image Density 2

Camera may have difficulty memorizing images with thin lines or weak contrast. In this case, press and hold MEMO button for more than three seconds to adjust image density (16 levels). Levels change continuously as follows:

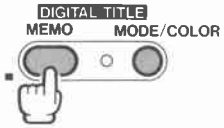
Original Image → (8 levels) → Thickest → Thinnest → (8 levels)

While monitoring using the screen, release MEMO button when the level has reached a suitable point. The title will be stored.
Titles written on white paper with a thick black pen will store without any problem.

Notes:

- Titles cannot be created:
  1. during recording
  2. during PLAY mode
- When a new title is stored, the previously stored title is erased.
- If DISPLAY button is pressed and no digital title has been stored, a random title left in memory will be displayed. This is not a malfunction.
- A digital title will be stored until it is replaced by a new one.

2



Changing Colour/Reversing Title 3

Titles can be created in 8 colours and title and background can be reversed.

1. While title is displayed on screen, press MODE/COLOR button to select desired colour.

- Each time button is pressed, title colour display in viewfinder changes as follows:

WHT → BLU → GRN → SKY → RED → VIO → YEL → BLK
BLK ← YEL ← VIO ← RED ← SKY ← GRN ← BLU ← WHT

- The enclosed section indicates colour of the reversed title.

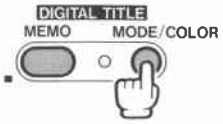
Adding Shadow 4

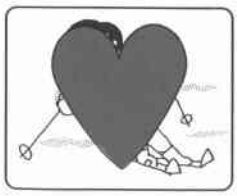
In the shadow mode, the title can be given a three-dimensional appearance.

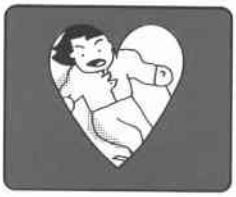
1. While title is displayed on screen, press and hold MODE/COLOR button for three seconds or more.

- To cancel shadow mode, press and hold MODE/COLOR button again for three seconds or more.

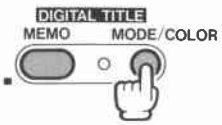
3







4



See-through MENU 2 5

In the see-through mode, the title can be made to appear transparent on the screen.

1. While title is displayed on screen, press MENU button twice.

- MENU 2 is displayed in viewfinder.
- Make sure arrow is aligned with DT TINT.

2. Press SELECT button.

- Title appears in see-through colour.
- <> is added to the title colour display in viewfinder.

3. Press MENU button three times.

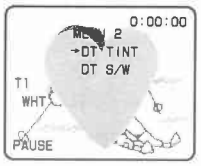
- Menu disappears from viewfinder.
- To cancel see-through mode, repeat steps 1-3 and <> disappears from title colour display in viewfinder.

Note:

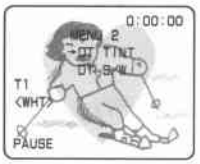
- Colour/reverse colour, shadow and/or see-through effects can be set when T1 or T2 is displayed, but not when T1+2 or T1*2 are displayed.

5

1 MENU



2 SELECT



3 MENU

Scroll/Wipe Display MENU 2 6

In scroll mode, the title appears to flow over the screen. In wipe mode, the title is displayed as if opening a curtain.
The title can be scrolled in or scrolled out, wiped in or wiped out in 4 directions.

❶ **Scroll in**
❷ **Scroll out**
❸ **Wipe in**
❹ **Wipe out**

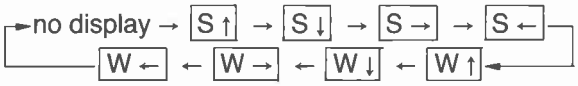
1. Press MENU button twice.

- MENU 2 is displayed in viewfinder.

2. Use +/− buttons to align the arrow with DT S/W.

3. Press SELECT button.

- Each time button is pressed, S or W appears with an arrow in viewfinder in the following order:



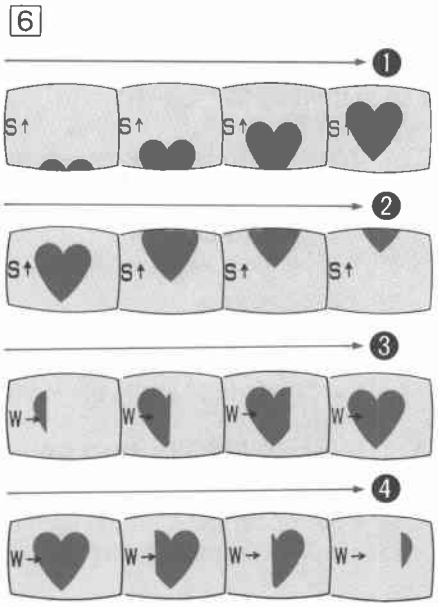
- S means scroll and W means wipe. Arrows indicate direction of scrolling or wiping.

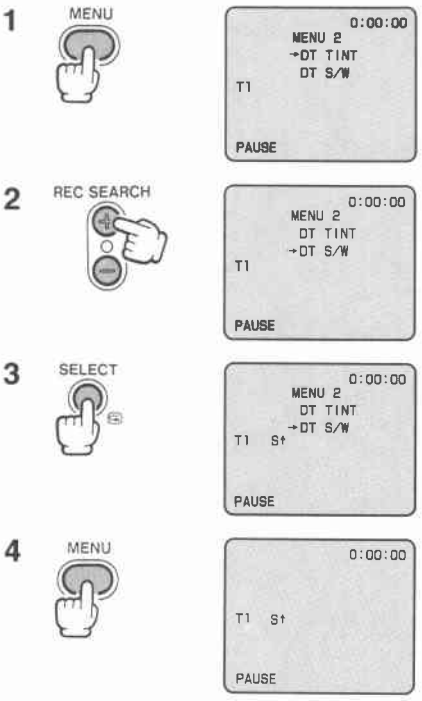
4. Press MENU button three times.

- Menu disappears from viewfinder.
- To cancel scroll/wipe mode, repeat steps 1-4 and S or W disappears from the viewfinder.

Scroll/wipe of digital title

- When no title is displayed in the viewfinder and the DISPLAY button is pressed, the title appears in the viewfinder with a scroll or wipe effect (scroll-in, wipe-in).
- When a title is displayed in the viewfinder and the DISPLAY button is pressed, the title disappears from the viewfinder with a scroll or wipe effect (scroll-out, wipe-out).





Animated Title [7]

When you select T1∗2, by alternately displaying the first and second title pages, a simple two-frame animation effect can be achieved. When combined with the scroll or wipe mode, even more interesting titles can be created. Study the examples on page 110 and make up your own interesting titles.

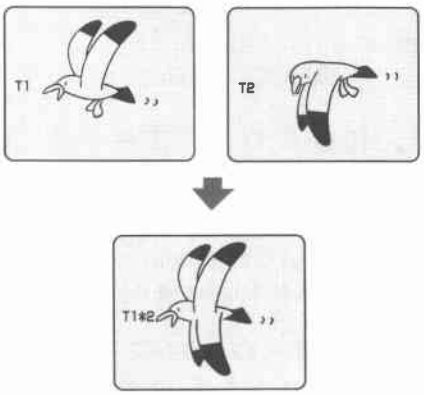
Simultaneous Display [8]

When you select T1+2, the two title pages can be displayed simultaneously.

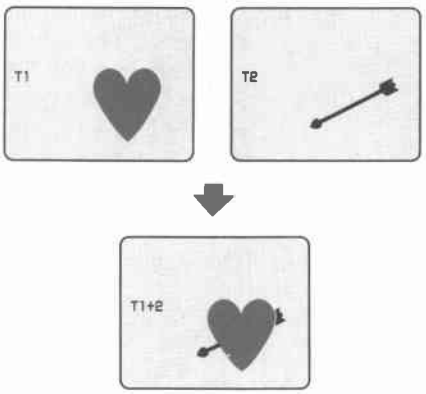
Note:
The two titles can be made to appear together. However, the desired result cannot always be obtained:

- If one page is set for normal display, and the other for the see-through effect, the titles will be displayed normally. When using see-through mode for two pages of titles, select this mode for both pages.

[7]



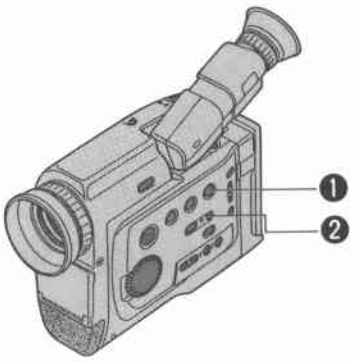
[8]



Recording Digital Titles (CAMERA Mode)

Titles can be displayed one at a time, two simultaneously, or alternately. It is possible to record the title with the scene by recording while a title is being displayed.

❶ **DISPLAY Button**
❷ **MODE/COLOR Button**



Selecting a Title for Recording [1]

1. When no title is displayed, press MODE/COLOR button.

- Each time button is pressed, the title memory/display mode display in viewfinder will change as follows.

→T1 → T2 → T1+2 → T1∗2→

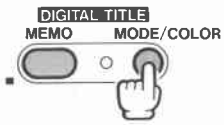
T1: Press DISPLAY button to display title stored in memory 1.
T2: Press DISPLAY button to display title stored in memory 2.
T1+2: Press DISPLAY button to display titles stored in memory 1 and 2 together. When portions of the two titles overlap, T1 title is displayed.
T1∗2: Press DISPLAY button to display titles in memory 1 and 2 alternately.

2. Press DISPLAY button.

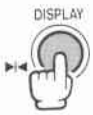
- The selected title will be displayed.
- Press button again to make the title disappear from the viewfinder.

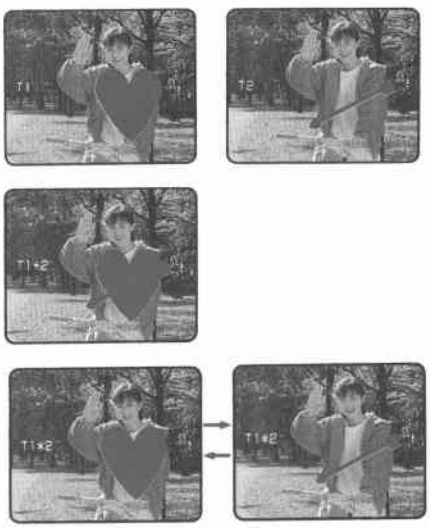
[1]

1



2





Recording a Title [2]

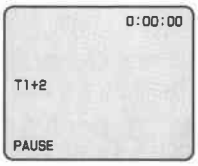
1. **Select desired title before starting to record.**
2. **Press start/stop button.**
   - Recording begins.
3. **Press DISPLAY button.**
   - The selected title mode is displayed and title is superimposed and recorded.
4. **To make the title disappear from the viewfinder, press DISPLAY button once more.**

Hint:

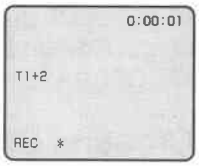
- The title can be included from the very beginning of the recording by pressing the DISPLAY button before the start/stop button is pressed.

[2]

1

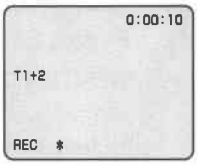


2



3

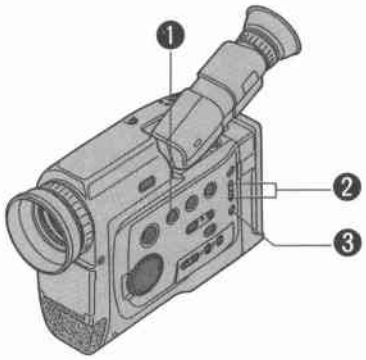
4

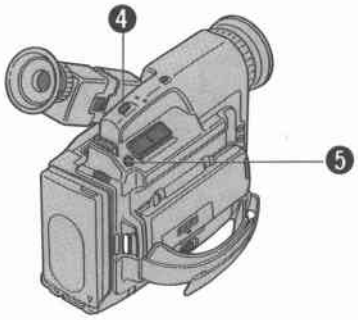


Adding Character Titles to Recordings (CAMERA Mode)

In addition to the digital title function, this camera also includes a character title function. You can create and store character titles and superimpose them on your recordings, together with the date and/or time.

❶ **C. TITLE Button**
❷ **+/— Buttons**
❸ **SELECT Button**
❹ **MODE SELECT Button**
❺ **OPERATE Button**





Creating Character Titles

Remember to create title before you start recording. Titles may be one or two lines of up to 16 characters each.

1. Turn camera on.
- CAMERA indicator (red) lights up.

2. Press C. TITLE button for more than three seconds to display title lines in viewfinder.
- Flashing dot or character indicates that cursor is present.

3. Press SELECT button to move cursor to point where you want title to start.
- Press once to move cursor one space right.
- Press and hold to move cursor continuously.
- Cursor does not move backwards.

4. Use +/— buttons to scan list of title characters.
- Press + button to scan forward through list.
- Press — button to scan list in reverse order.
- Press once to scan characters one at a time.
- Press and hold to scan characters quickly.

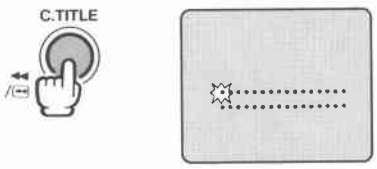
Title Characters List

□ABCDEFGHIJKLMNOPQRSTUVWXYZÄÖÜØÅÆÑÇË□
& ∗ ! ? ; : " ' - / . , 9876543210

- If you select □, a flashing dot appears in viewfinder, but a space will appear during actual recording and playback.
- Press both +/— buttons simultaneously to erase all characters at and to right of cursor.

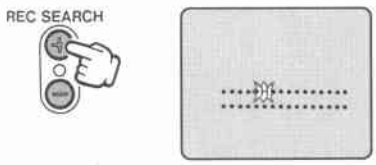
1

2



3

4

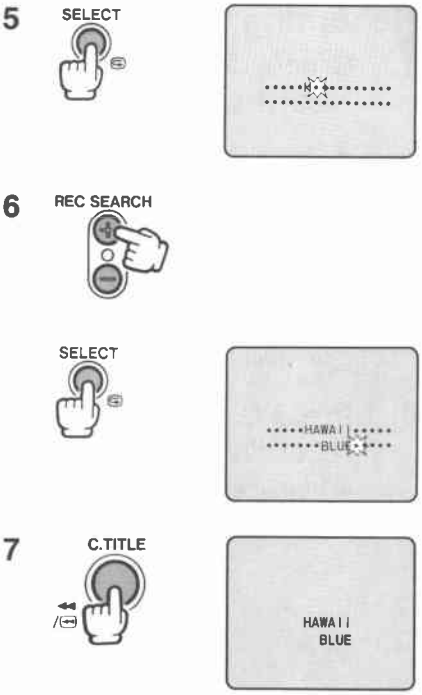


5. **When desired character is displayed, press SELECT button again to move cursor to next position.**

6. **Repeat steps 4 and 5 until title is complete.**

7. **When title is finished, press C. TITLE button.**
   - Title is saved in camera's memory.
   - Press C. TITLE button again to make title disappear from viewfinder.

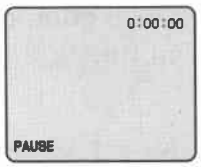
Notes:
- Character title cannot be created during recording, when setting the date or date/time or when a menu is being displayed.
- Title cannot be created or recorded in PLAY mode.



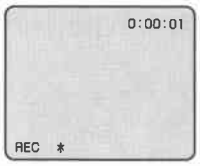
Recording Character Titles

1. **Create character title before starting to record.**
2. **Press start/stop button to start recording.**
3. **Press C. TITLE button.**
   - Title appears in viewfinder, and will be recorded with scene.
   - Reverse steps 2 and 3 if you want title to appear right at the beginning of recording.
4. **Press C. TITLE button again to end title recording.**
   - Character title disappears from viewfinder and recording continues.

1

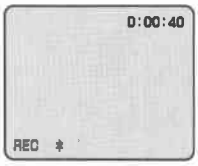


2



3

4

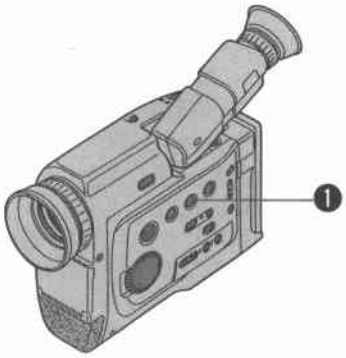


Recording Date and Time (CAMERA Mode)

By using auto date/time function, date and time of the recording can be included in the scene. Date and time can be recorded separately or together. They can also be included with a title.

•For setting date and time see page 24.

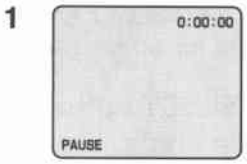
❶ DATE Button

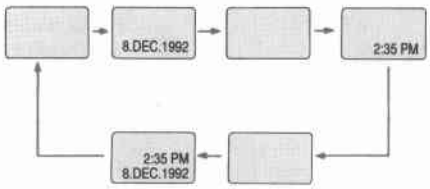


1. Place camera in record pause mode.

2. Press DATE button and select display.

- Each time button is pressed, display changes as shown at right.





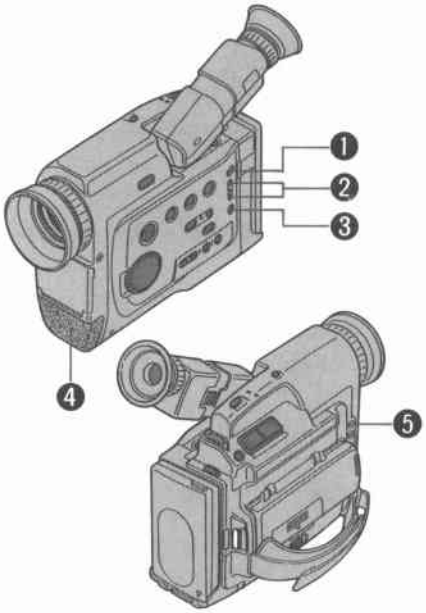
3. Press start/stop button.

- Recording begins.
- Date and time are superimposed and recorded.

Selecting Microphone Angle (CAMERA Mode) MENU 3

The camera uses a built-in MS (Mid-Side) type microphone to achieve superior stereo acoustic presence. It has four recording angle settings. Select the desired recording angle according to the recording situation.

❶ **MENU Button**
❷ **+/– Buttons**
❸ **SELECT Button**
❹ **Stereo Microphone**
❺ **HEADPHONES Terminal**



1. Place camera in record pause mode.

2. Press MENU button three times.

- MENU 3 is displayed in viewfinder.
- Make sure the arrow is aligned with MIC.

3. Press SELECT button to select the desired recording angle.

- Each time SELECT button is pressed, microphone angle display changes as follows:

┌→No display → NARROW → WIDE → ZOOM─┐

❻ **NARROW:** For recording a narrow area around subject
❼ **WIDE:** For recording a wide area around subject
ZOOM: For automatic adjustment of recording angle (WIDE—NARROW) to zoom action (wide angle—telephoto)
❽ **No display:** For standard recording

4. Press MENU button twice.

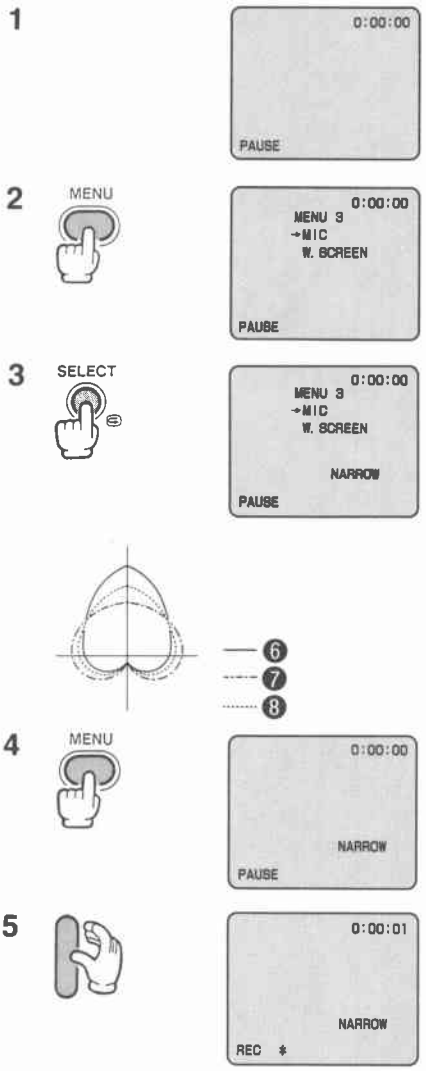
- Menu disappears from viewfinder.

5. Press start/stop button.

- To return to standard recording angle, repeat steps 1-4, and previous recording angle setting disappears from viewfinder.

Hint:
- Use the headphones to monitor the sound while recording.

Notes:
- These settings do not work for the external microphone.
- Microphone angle setting is memorized even when the camera is turned off.

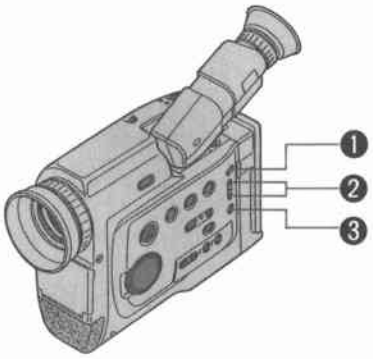


Connecting Headphones

Connect commercially available stereo headphones to the HEADPHONE terminal, stereo sound during recording and playback can be monitored.

Auto Wind Screen off Function (CAMERA Mode) MENU 3

When recording outdoors, the wind noise may disrupt the sound you wish to record. The built-in auto wind screen function reduces the wind noise.
However, if you are recording indoors or in a location where there is no wind, the auto wind function can be turned off.
- Auto wind screen is set to **on** at time of purchase.

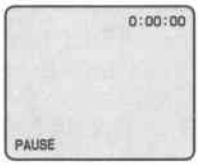


❶ **MENU Button**
❷ **+/– Buttons**
❸ **SELECT Button**

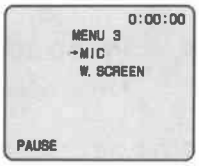
1. **Place camera in record pause mode.**
2. **Press MENU button three times.**
   - MENU 3 is displayed in viewfinder.
3. **Use +/– buttons to align arrow with W. SCREEN.**
4. **Press SELECT button.**
   - "W ↓" appears in viewfinder.
5. **Press MENU button twice.**
   - Menu disappears from viewfinder.
   - To cancel auto wind screen off function, repeat steps 2-5. "W ↓" disappears from viewfinder.

Notes:
- Auto wind screen function does not work with an external microphone.
- Auto wind screen off setting is memorized even when camera is turned off.

1



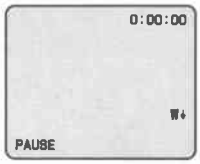
2 MENU



3 REC SEARCH

4 SELECT

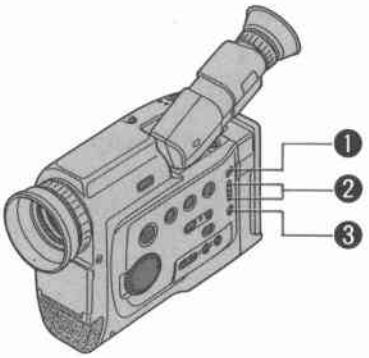
5 MENU



Selecting Tape Speed (CAMERA Mode) MENU 4

The camera has two recording speeds for normal or double recording time. For normal recording time and best picture quality, select SP (Standard Play). For double recording time, select LP (Long Play). During playback, the camera automatically selects the tape speed.

❶ **MENU Button**
❷ **+/– Buttons**
❸ **SELECT Buttons**



1. Press MENU button four times.

- MENU 4 is displayed in viewfinder.
- Make sure the arrow is aligned with SP/LP.

2. Press SELECT button to choose tape speed.

- Each time SELECT button is pressed, tape speed display in viewfinder changes to SP or LP.

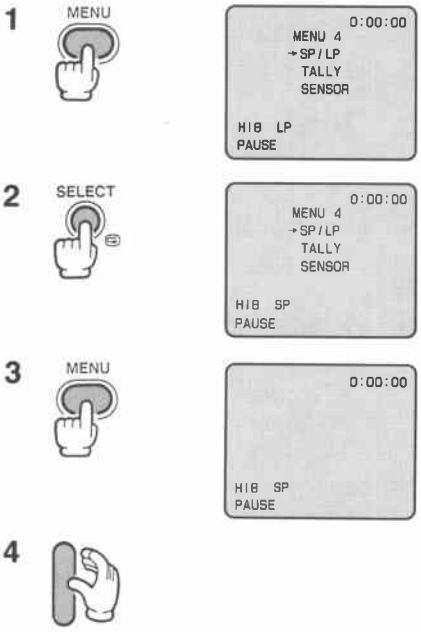
3. Press MENU button once.

- Menu disappears from viewfinder.

4. Press start/stop button.

- Recording begins.

To change tape speed, repeat steps 1-3 again.

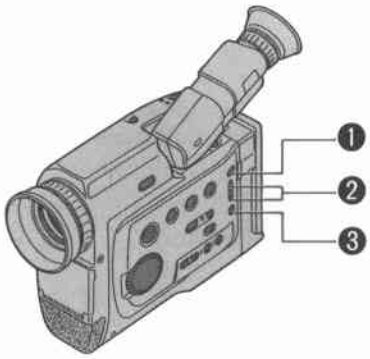


Tally Lamp off Function (CAMERA Mode) MENU 4

When recording through glass or recording close-ups, the flashing of the tally lamp may be reflected in glass or from the close-up subject. In such cases, it is possible to turn off the tally lamp so that it emits no light.

- Tally lamp is set to **on** at time of purchase.

❶ **MENU Button**
❷ **+/– Buttons**
❸ **SELECT Button**



1. Press MENU button four times.

- MENU 4 is displayed in viewfinder.

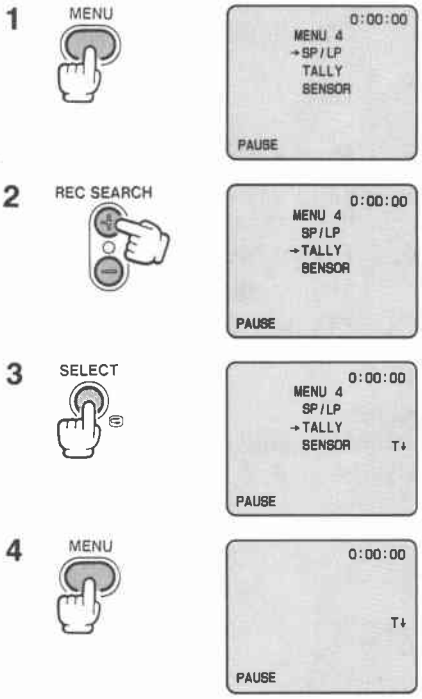
2. Use +/– buttons to align arrow with TALLY.

3. Press SELECT button.

- "T ↓" appears in viewfinder.

4. Press MENU button once.

- Menu disappears from viewfinder.
- To turn tally lamp on again, repeat steps 1-4 and "T ↓" disappears from the viewfinder.



Notes:

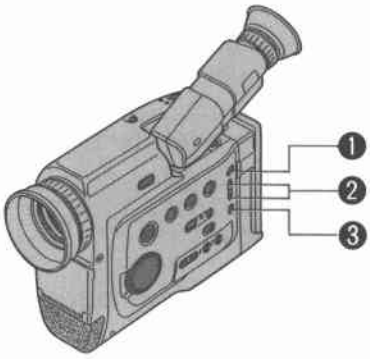
- The tally lamp also lights when the remote sensor receives a signal from the wireless controller, even if the tally off function is selected.
- Tally lamp off setting is memorized even when camera is turned off.

Remote Sensor off Function (CAMERA Mode) MENU 4 MENU

While using your camera, wireless controllers from other Canon video cameras being used nearby may affect your camera. In such cases, it is possible to turn the remote sensor off. This function can be selected either from MENU 4 (CAMERA mode) or MENU (PLAY mode). The following procedure is for MENU 4 (CAMERA mode) function.

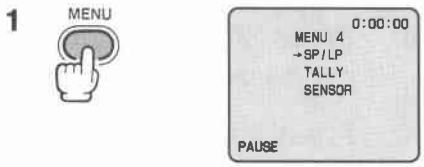
- Remote sensor is set to **on** at time of purchase.

❶ **MENU Button**
❷ **+/– Buttons**
❸ **SELECT Button**

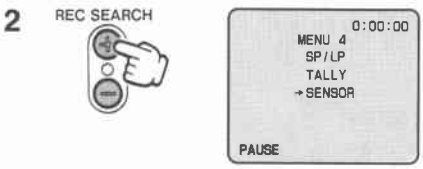


1. Press MENU button four times.

- MENU 4 appears in viewfinder.
- When selecting this function in PLAY mode, press MENU button once. MENU appears in viewfinder.

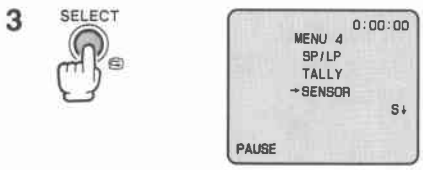


2. Use +/– buttons to align arrow with SENSOR.



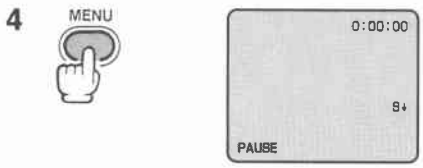
3. Press SELECT button.

- "S ↓" is displayed in viewfinder.



4. Press MENU button once.

- Menu disappears from viewfinder.
- To turn remote sensor on again, repeat steps 1-4 and "S ↓" disappears from viewfinder.



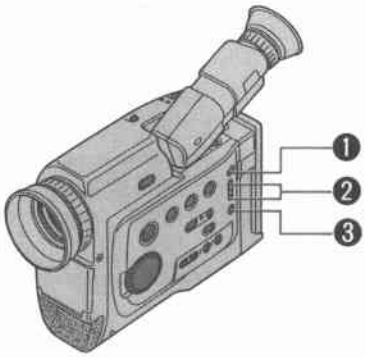
Note:

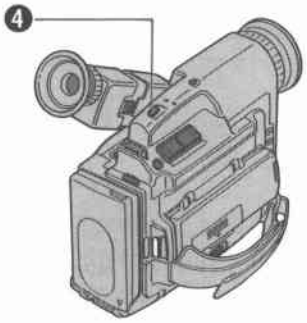
- Remote sensor off setting is memorized even when camera is turned off.

Selecting Bilingual Soundtrack Mode (PLAY Mode) MENU

You can switch between the main soundtrack and substitute soundtrack when playing back a bilingual video cassette. During playback of a bilingual video cassette, the current setting will be displayed in the viewfinder.

❶ **MENU Button**
❷ **+/— Buttons**
❸ **SELECT Button**
❹ **MODE SELECT Button**





1. Press MODE SELECT button to select PLAY mode.

2. Press MENU button once.

- MENU is displayed in viewfinder.
- Make sure the arrow is aligned with BILINGUAL.

3. Press SELECT button to select soundtrack.

- Each time SELECT button is pressed, display in viewfinder changes as follows:

No display → MAIN → SUB → MAIN + SUB

MAIN: Main soundtrack playback only
SUB: Substitute soundtrack playback only
MAIN + SUB: Simultaneous main and substitute soundtrack playback (MAIN from left channel, SUB from right channel)
No display: For normal playback

4. Press MENU button once.

- Menu disappears from viewfinder.

5. Press PLAY ▶ button.

- When camera is switched to CAMERA mode, it goes back to normal mode.

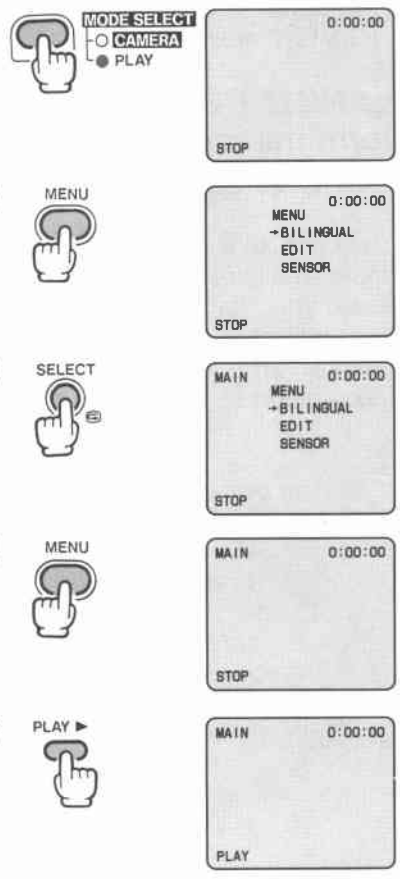
Hint:

- You can select sound mode during playback.

Note:

- During playback of tape recorded in stereo or monaural, select no display setting.

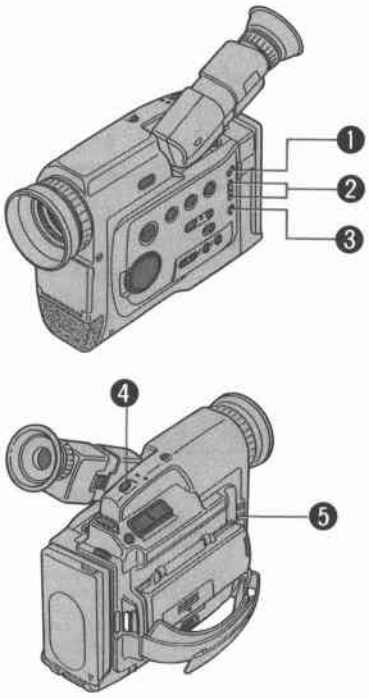
Explanation:
Bilingual Video Cassettes
Bilingual video cassettes incorporate two separate soundtracks, such as two different languages, through the use of a special recording system. At present, video cassettes recorded by this system are available in a few countries.



Selecting Edit Mode (PLAY Mode) MENU

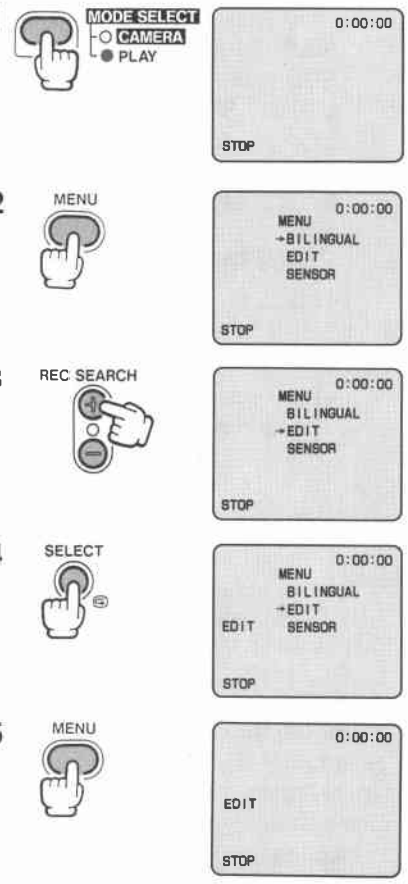
To minimize the loss of picture quality, select the EDIT mode when the camera is used as a playback VTR during editing. Except when editing, keep the EDIT mode set to **off**.

❶ **MENU Button**
❷ **+/– Buttons**
❸ **SELECT Button**
❹ **MODE SELECT Button**
❺ **LANC REMOTE Terminal**



1. **Press MODE SELECT button to PLAY mode.**
2. **Press MENU button once.**
   - MENU is displayed in viewfinder.
3. **Use +/– buttons to align arrow with EDIT.**
4. **Press SELECT button.**
   - "EDIT" appears in viewfinder.
5. **Press MENU button once.**
   - Menu disappears from viewfinder.
   - To turn edit mode off again, repeat steps 1-5 and "EDIT" disappears from viewfinder.

Note:
- Press MODE SELECT button to switch from PLAY mode to CAMERA mode, edit mode automatically returns to **off**.



LANC REMOTE Terminal (Remote control terminal for editing)

LANC stands for Local Application Control Bus System.

The LANC terminal (remote control terminal for editing) allows you to connect editing equipment such as the VE-100 Video Editor, videocameras and video recorders which carry this terminal, to facilitate assembly editing. Certain operation buttons may not operate or some may be different to those of the camera.

Using an External Microphone 1

When recording in quiet locations, the sound of the camera's mechanisms may be picked up by the camera's built-in microphone. To prevent this, an external microphone can be used. Highly effective recordings are possible using the ZM-100 Stereo/Zoom Microphone (see p. 104).

The external microphone is attached to the camera with the optional SA-1 Adapter Bracket (see p. 103).

1. **Attach microphone to camera using the SA-1.**
   - For further details, refer to SA-1 instruction manual.
2. **Connect external microphone plug to MIC terminal on camera.**
   - When using an external microphone which does not have its own power source, connect to DC terminal.

Notes:
- When using a commercially available microphone, be sure it is a stereo microphone.
- When using an external microphone, neither the auto wind screen nor the microphone angle adjustment operate.

1

1

2

Using a Tripod 2

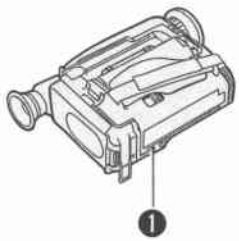
It is recommended that the camera be attached to a tripod for recording in the following situations.

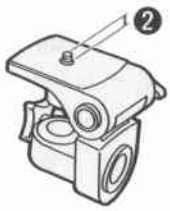
- Telephoto recording
- Self-timer recording
- When the wireless controller is being used

❶ **Tripod Socket**

Notes:
- Avoid direct sunlight entering the viewfinder. The lens concentrates the rays which then melt the viewfinder casing.
- When using a tripod, make sure that the fastening screw is no longer than 6.5 millimetres. A screw longer than 6.5 millimetres will damage the camera. ❷
- Video cassettes cannot be loaded or unloaded when the camera is mounted on a tripod.

2





Editing to Another VTR (PLAY Mode)

With the help of a second VTR, your camera can also be used as a playback VTR to edit your recording.

Connection Procedure

You need the DC-100 DC Coupler, CA-100 Compact Power Adapter (or CB-110 Car Battery Adapter) and the appropriate cables (see below).

- Turn camera off when connecting.

The connecting accessories included in the kit vary according to areas. Use the following chart to determine what your kit should contain:

	EUROPE, etc.	UK, etc.	ASIA, OCEANIA, LATIN AMERICA, etc.
PC-170ST Stereo SCART Cable	1	—	—
C-150 AV Cable	—	—	1
ST-150 Stereo Cable	—	1	1

Using VTR with S-video Input Terminal

Stereo 1

Connect S-video/audio terminal of camera to S-video/audio terminal of VTR using the S-150 S-video Cable and stereo cable.

1. **To S-video Terminal**
2. **To Audio Terminals (Ⓛ white = left; Ⓡ red = right)**
3. **S-150**
4. **Stereo Cable (white = left; red = right)**
5. **To Audio Input Terminals**
6. **To S-video Input Terminals**

Using VTR with Audio/Video Input Terminals

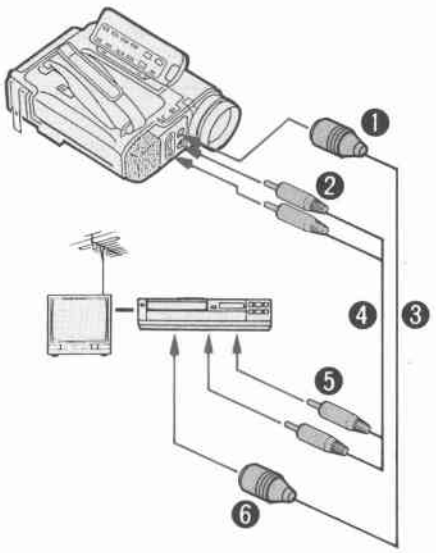
Stereo 2

Connect audio/video terminal of camera to audio/video terminal of VTR using a stereo cable and the optional C-150 AV Cable.

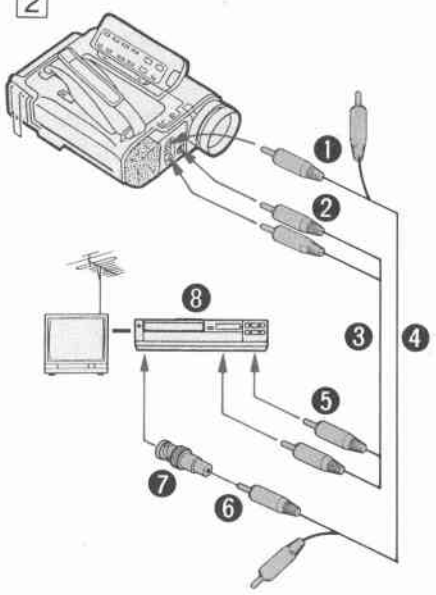
1. **To Video Terminal (yellow)**
2. **To Audio Terminals (Ⓛ white = left; Ⓡ red = right)**
3. **Stereo Cable (white = left; red = right)**
4. **C-150 [yellow = video; white (or black) plug is not used]**
5. **To Audio Input Terminals**
6. **To Video Input Terminal**
7. **BNC Adapter (commercially available)***
8. **Second VTR (recording)**

* If TV has BNC-type video input terminal, attach a commercially available BNC adapter to C-150 AV cable.

1



2



Preparations

TV [3]

Turn TV on and set TV to video channel, or set TV/VTR selector to VTR.

VTR [4]

Turn on second VTR and load a recordable video cassette. See VTR instruction manual for details.

CAMERA [5]

Turn camera on and load video cassette for playback. Press MODE SELECT button to select PLAY mode. Select Edit mode (see p. 92)

Note:

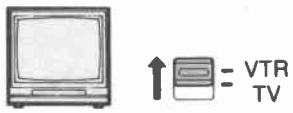
- Both image and sound quality of edited tape will be somewhat less than that of the original.

Editing Procedure [6]

❶ **REW/ ⏪ Button**
❷ **PLAY ▶ Button**
❸ **FF/ ⏩ Button**
❹ **STOP ■ Button**

1. **Locate a point slightly before editing start point on video cassette in camera.**
2. **Set second VTR to record pause mode.**
   - Select LINE IN mode on second VTR.
3. **Press camera PLAY ▶ button.**
   - Check playback picture on TV screen.
4. **Release second VTR from record pause mode at editing start point.**
   - Recording begins on second VTR.
5. **Press STOP ■ button on camera and second VTR to end editing.**

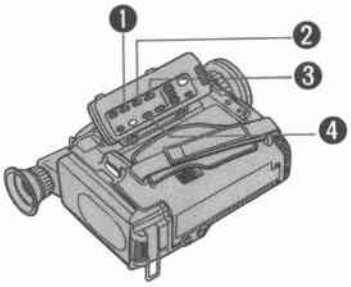
[3]



[4]

[5]

[6]



1

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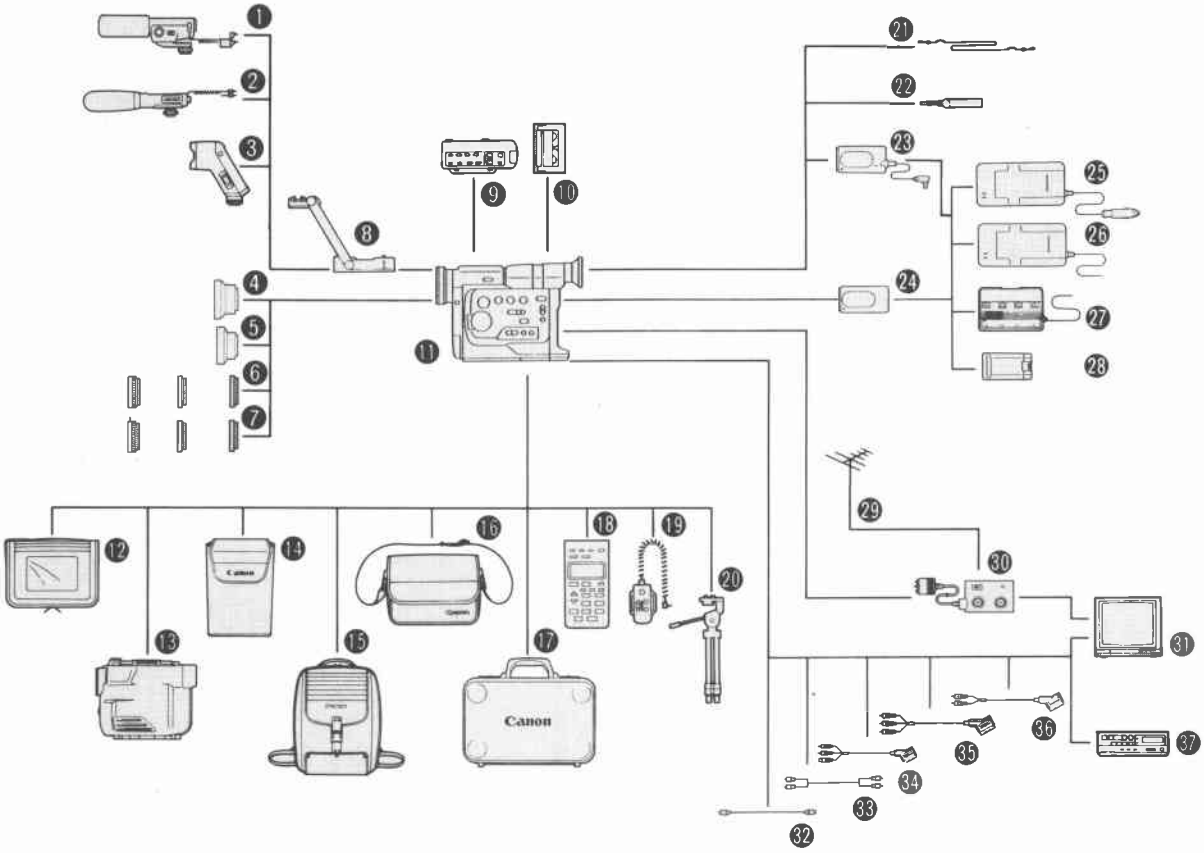
5

Additional Information

Canon UC1Hi Video System Chart



❶ ZM-100 Stereo/Zoom Microphone
❷ MM-200 Stereo Mixing Microphone
❸ VL-20 Battery Video Light
❹ WD-37 Wide-converter
❺ TL-37 Tele-converter
❻ FS-37U Filter Set
❼ FS-37 Filter Set
❽ SA-1 Adapter Bracket
❾ WL-1 Wireless Controller
❿ 8mm Video Cassette
⓫ UC1Hi
⓬ RS-U1 Rain Shield
⓭ SK-U1 Sports Pack
⓮ SJ-U1 Soft Video Jacket
⓯ VK-U1 Video Backpack
⓰ SC-U1 Soft Carrying Case
⓱ HC-U1 System Case
⓲ VE-100 Video Editor
⓳ ZR-100 Zoom Remote Controller
⓴ Tripod
㉑ SS-200 Shoulder Strap
㉒ WS-20 Wrist Strap
㉓ DC-100 DC Coupler
㉔ BP-E77K/BP-E722/BP-E722D Battery Pack
㉕ CB-110 Car Battery Adapter
㉖ CA-100 Compact Power Adapter
㉗ MC-100 Multi-battery Charger
㉘ BT-U1 Battery Case
㉙ Aerial
㉚ RU-100 RF Unit
㉛ TV
㉜ S-150 S-video Cable
㉝ C-150 AV Cable
㉞ PC-270SST S-stereo SCART Cable
㉟ PC-170ST Stereo SCART Cable
㊱ PC-150 SCART Cable
㊲ VTR

Optional Accessories

HC-U1 System Case [1]

The optional HC-U1 System Case stores and helps protect the camera and its accessories during transportation and storage.

Items Stored in the System Case

The following items can be stored:

- ❶ **TL-37 Tele-converter or WD-37 Wide-converter or a filter set**
- ❷ **Two battery packs**
- ❸ **One additional video cassette**
- ❹ **RU-100 RF Unit**
- ❺ **Cables**
- ❻ **Camera with video cassette, shoulder strap/wrist strap**
- ❼ **CA-100 Compact Power Adapter (or CB-110 Car Battery Adapter)**
- ❽ **DC-100 DC Coupler**

Opening and Closing Case

To open, place the case so that the UP sign is on top, then slide the two locks toward the outside.

Notes:

- Do not leave the case in areas of extreme heat.
- Do not expose the case to strong vibrations or shock.
- Do not place heavy objects on top of case.
- Two keys are provided with the HC-U1 System Case.
- Power is slowly drained while the battery pack is attached to the camera, even when the camera is turned off. Remove the battery pack when you don't expect to use the camera.

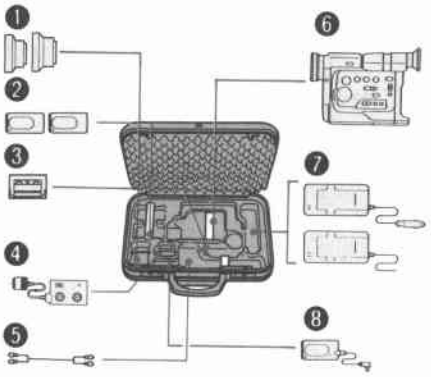
SC-U1 Soft Carrying Case [2]

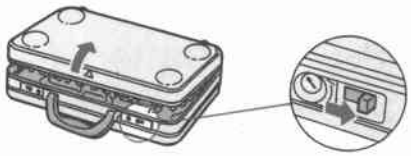
The optional SC-U1 Soft Carrying Case provides lightweight protection for the camera and accessories.

VK-U1 Video Backpack [3]

The optional VK-U1 Video Backpack is a handy portable case for transporting camera and accessories. Its full-length zipper opening allows the contents to be put in and taken out easily.

[1]





[2]

[3]

CB-110 Car Battery Adapter [4]

For recording using car battery.
Plug into cigarette lighter socket.
For use only with 12 or 24 V DC negative ground car battery.

BT-U1 Battery Case [5]

Six AA alkaline batteries can be loaded in this battery case for the camera power supply.
* Cannot be used in low temperatures.

MC-100 Multi-battery Charger [6]

MC-100 Multi-battery Charger is a sequential high-speed charger controlled by a microcomputer for charging up to four Canon battery packs. Also the MC-100 automatically performs charging, discharging and recharging to refresh battery packs.

- Charging time: 45 min. (BP-E77K)
  90 min. (BP-E722)

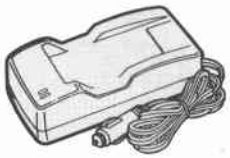
BP-E722 Battery Pack [7]

Use for lengthy recording. Its continuous recording time is approximately 90 minutes. Hold the camera with both hands when using this battery.

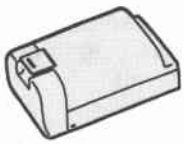
BP-E722D Battery Pack [8]

This battery pack is equipped with an LED display for indicating the remaining charge. Use it for lengthy recordings. Like the BP-E722, it has a continuous recording time of approximately 90 minutes. Hold the camera with both hands when using this battery.

[4]

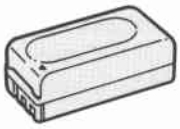


[5]



[6]

[7]



[8]

SJ-U1 Soft Video Jacket [9]

The SJ-U1 Soft Video Jacket, designed for convenient transportation of the camera, protects it from dust and scratches.

RS-U1 Rain Shield [10]

A vinyl cover to protect the camera from light rain or mist.

SK-U1 Sports Pack [11]

The SK-U1 Sports Pack permits underwater recording as deep as 1 metre and makes recording in various places such as sea or ski resorts possible.
Operable controls are OPERATE button, start/stop button record review button, and power zoom buttons.

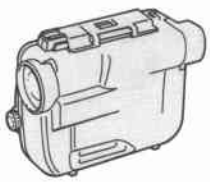
SA-1 Adapter Bracket [12]

Use to attach an external microphone or a battery video light to the camera.

[9]

[10]

[11]



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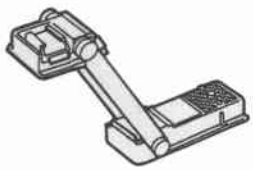


ZM-100 Stereo/Zoom Microphone [13]

The ZM-100 Stereo/Zoom Microphone has a high-performance stereo function to adjust the angle of sound recording, and a zoom function for recording nearby or faraway sounds.

MM-200 Stereo Mixing Microphone [14]

The MM-200 enables sound from the microphone and music to be mixed.

VL-20 Battery Video Light [15]

This light, compact option uses the BP-E77K, BP-E722 or BP-E722D Battery Pack and is ideal for indoor or outdoor shooting.

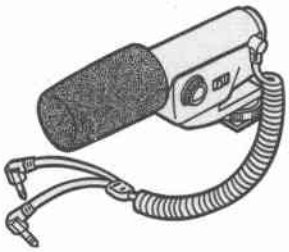
TL-37 Tele-converter [16]

This optional tele-converter is a magnification converter lens that increases the focal length of the camera lens by a factor of 1.4.

WD-37 Wide-converter [17]

This optional wide converter decreases the focal length by a factor of 0.75.

[13]



[14]

[15]

[16]

[17]

FS-37U Filter Set [18]

The optional FS-37U Filter Set contains three filters: UV, ND8 and circular PL.

- If a filter is used when shooting in wide-angle end, vignetting will occur at periphery of picture (edge of picture becomes dark and blurred).

FS-37 Filter Set [19]

The optional FS-37 Filter Set contains three filters: multiple-image filter 5×, R-cross filter 6× and zoom spot filter.

- If a filter is used when shooting in wide-angle end, vignetting will occur at periphery of picture (edge of picture becomes dark and blurred).
- Use manual focus when using these filters.

WS-20 Wrist Strap [20]

The optional wrist strap provides an extra measure of protection for active shooting.

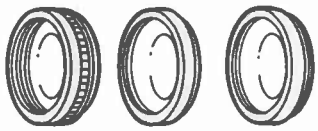
ZR-100 Zoom Remote Controller [21]

When attached to the camera's LANC REMOTE terminal, this controller allows the camera's zoom, start/stop and record search/review functions to be controlled without touching the camera itself.

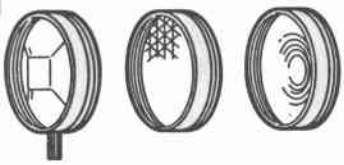
VE-100 Video Editor [22]

When connected to the LANC terminal of the camera and another videocamera or VTR, the VE-100 allows assembly editing to be performed easily.

[18]



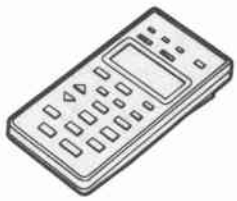
[19]



[20]

[21]

[22]



During Use

Avoid High Temperatures and High Humidity.
Do not expose camera to high temperatures or high humidity, such as inside a car during hot weather, when all the doors and windows are shut. Such exposure can cause damage.

Avoid Exposure to Strong Electromagnetic Waves.
Do not use camera close to sources of magnetic or electric fields (power plant, TV tower, TV set, magnets, motors, audio equipment, etc.)

Do Not Expose Camera to Rain or Water.
Place protective covering over camera if you'll be recording in the rain. If, somehow, water does get into the camera, contact qualified service personnel as soon as possible.

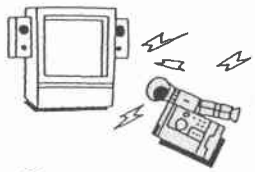
Avoid Pointing Lens into Direct Sunlight or Other Strong Light Sources.
Do not aim lens directly at the sun or other strong light, or leave lens aimed at a very bright subject since this can cause damage.

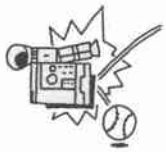
Do Not Expose the Camera to Excessive Heat.
When using lighting equipment, be sure not to expose the camera to too much heat radiating from such equipment.

Always Replace Lens Cap.
Always replace lens cap after use to prevent sand and dust from getting on lens. Be especially careful to affix cap on windy days.

Avoid Sudden Changes in Temperature.
If camera is suddenly brought into a warm place from a cold place, condensation can form on internal parts and lens. So take appropriate care when moving the camera.

Do Not Expose Camera to Shock or Vibrations.
Be sure to handle camera gently. Vibration or shock can cause damage.





Maintenance

Keep the Heads Clean.
The video heads should be cleaned only when necessary, preferably with the Canon 8mm Video Head Cleaning Cassette CC-8 included in the optional Canon 8mm Video Cleaning Kit CK-E1.

Clean Camera with a Soft, Dry Cloth.
The camera should be cleaned using a soft, dry cloth. Do not use chemically treated cloth or volatile solvent such as paint thinner, since this can damage the camera.

Store Camera Properly.
If you do not intend to use the camera for some time, store it in an area free of moisture and dust, and where ambient temperature is no higher than 30°C.

Check the Operation of Each Component.
If the camera has not been used for a long time, be sure to check that each component functions correctly before use.

Store Cassette Tape Properly.
Do not place video cassettes in areas exposed to direct sunlight, near heat-radiating sources such as stoves, or close to magnetic bodies such as speakers, since these can cause tape deformation and damage to valuable recordings.

Safety Precautions

Do Not Disassemble Camera.
It is very dangerous to disassemble camera or touch any of its internal parts. If camera does not function properly, take it to qualified service personnel.

Using Battery Pack.
Carefully read battery pack instructions before use.

Problems and Troubleshooting

Use the following checklist for troubleshooting when you have problems with your camera. Consult your local dealer or service outlet if problems persist.
Be sure all connections are properly made when using the camera with other units.

Problem	Cause	Remedy
Camera does not turn on.	Battery pack charge is low.	Replace with fully charged battery pack.
Camera turns off during operation (using battery pack).	Battery pack charge is low.	Replace with fully charged battery pack.
	Record pause mode has lasted for more than five minutes.	Turn camera on again.
Video cassette compartment does not open.	Battery pack charge is low.	Replace with fully charged battery pack.
Camera does not function when an operation button is pressed.	Camera is turned off.	Turn camera on.
	Video cassette is not loaded.	Load a video cassette.
	Battery pack is not properly attached to camera.	Attach battery pack securely to camera (see p. 16).
CAMERA or PLAY indicator flashes and "BATT" flashes in viewfinder.	Battery pack charge is low.	Replace with fully charged battery pack.
CAMERA or PLAY indicator flashes and "DEW" flashes in viewfinder.	Condensation has formed inside unit.	Refer to Condensation (see p. 110).
CAMERA or PLAY indicator flashes and "EJECT" flashes in viewfinder.	Safety mechanism is activated.	Unload and reload video cassette.
"DATE" flashes in viewfinder. Date and time are incorrect or have stopped operating.	Internal lithium battery is discharged.	Connect AC power (see p. 26).
Start/stop button is pressed, but recording does not start.	Camera is turned off.	Turn camera on.
	Video cassette is not loaded.	Load a video cassette.
	Tape has ended ("T. END" appears in viewfinder).	Rewind tape or use another video cassette.
	Erasure prevention switch on video cassette is set to prevent recording ("TAPE" flashes in viewfinder).	Use another video cassette or set switch to enable recording (see p. 28).
	Camera is in PLAY mode.	Press MODE SELECT button.
No picture appears in viewfinder.	Lens cap is attached.	Remove lens cap.
	Camera is in PLAY mode.	Press MODE SELECT button.

Note:
This equipment contains a microprocessor. If external noise or interference occurs, random letters may appear in the viewfinder or normal operation may be interrupted. In this case, remove the power source and then replace it in the camera.

Problem	Cause	Remedy
Cannot adjust focus.	Subject is not suitable for autofocus.	Adjust focus in manual focus mode.
	Viewfinder diopter is not properly adjusted.	Turn diopter adjustment ring until viewfinder display becomes clear (see p. 23).
	Lens is dirty.	Clean the lens using a dry, soft cloth with due care not to scratch it.
	The finder is not pulled out.	Pull finder out.
Wireless controller does not operate.	S ↓ (sensor off) mode is selected.	Cancel S ↓ (sensor off) mode.
Tally lamp does not light or flash.	T ↓ (tally off) mode is selected.	Cancel T ↓ (tally off) mode.
Playback doesn't start when ▶ (PLAY) button is pressed.	Camera is in CAMERA mode.	Press MODE SELECT button.
	Camera is turned off.	Turn camera on and press MODE SELECT button.
	Video cassette is not loaded.	Load a video cassette.
	Tape has ended ("T. END" appears in viewfinder).	Rewind tape or use another video cassette.
Tape is moving, but no picture appears on TV monitor.	For TV without audio/video input terminals: Video channel is not set properly on both TV and RF unit.	Set TV and RF unit to appropriate video channel.
	For TV with audio/video input terminals: TV/VIDEO selector on TV is not set to VIDEO.	Set TV/VIDEO selector to VIDEO.
	Video heads are dirty.	Clean video heads using optional CK-E1 8mm Video Cleaning Kit.
Smear appears	A very bright subject is being shot with the high-speed shutter.	This is not a malfunction.

Playback appears rough

Although the TV program has been cleanly copied, the video playback appears rough. This is due to dirty video heads. Video heads should be cleaned using the optional CK-E1 8mm Video Cleaning Kit. For further details, refer to the CK-E1 instruction manual.

Condensation (DEW)

What is condensation?

Condensation (DEW) means tiny droplets of water that occasionally form on the camera surface when it is moved from a cold place to a warm place. Using the camera when condensation is present may damage both tape and camera.

Preventing condensation

Remove video cassette and place camera in a plastic bag prior to bringing it into a warm area where condensation is likely to occur. Wait until camera reaches room temperature before removing it from the bag.

When condensation is detected [1]

When condensation is detected in the camera, the CAMERA or PLAY indicator flashes, "DEW" flashes in the viewfinder, and the tape automatically stops. Immediately remove video cassette, leave video cassette compartment open and turn camera off. Leave the camera in a dry place until condensation evaporates.

- Sometimes "DEW" may not appear in the viewfinder until 10-15 minutes after dew has formed.
- You cannot load a video cassette when condensation is detected in the camera.

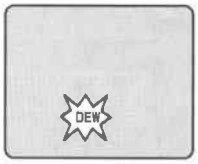
To start using camera again

Even when "DEW" and the CAMERA or PLAY indicator no longer flash when the camera is turned on, wait at least one more hour before attempting operation. The time required for condensation to clear varies with surrounding conditions; it can be as long as one hour.

Condensation is likely to occur when: [2]

1. **Camera is brought from a cold place to a warm place.**
2. **A cold room is heated rapidly.**
3. **Camera is placed in a humid room.**
4. **Camera is taken from an air-conditioned room to a warm and humid place.**

[1]



[2]

1.

2.

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Specifications

UC1Hi

Power supply (rated):	6 V DC
Power consumption:	6.8 W (during recording in autofocus mode)
Television system:	CCIR standard (625 lines, 50 fields) PAL colour signal
Video recording system:	4 rotary heads, helical scanning system Luminance signal: FM azimuth recording Colour signal: Converted subcarrier phase shift recording (8mm video standard)
Audio recording system:	Frequency multiplexing with the video signal by 4 rotary heads (two channels)
Image sensor:	1/3-inch CCD (Charge Coupled Device) 470,000 pixels (440,000 effective pixels)
Tape format:	8mm, metal evaporated/metal particle
Tape speed:	20.051 mm/s (SP) 10.026 mm/s (LP)
Maximum recording time:	3 hours with P5-90 video cassette, in LP mode
Lens:	f/1.8, 10× power zoom, 6-60 mm focal length
Focusing system:	TTL autofocus, manual focusing possible (using electronic focusing ring)
Minimum focusing distance:	10 mm wide-angle end 80 cm telephoto end 1 m intermediate zoom position
Minimum illumination:	4 lux (with gain-up function)
Recommended illumination:	More than 100 lux
Filter diameter:	37 mm
Electronic viewfinder:	0.5-inch monochrome CRT
Microphone:	Stereo electret condenser microphone
Input level:	−64 dBV/600 ohms, unbalanced (external mic)
Output level:	Video: 1 Vp-p/75 ohms, unbalanced (video output terminal); 1 Vp-p (Y signal)/0.286 Vp-p (C signal) (S-video output terminal) Audio: −10 dBV/less than 3 kohms, unbalanced (audio output terminal)
Dimensions (W × D × H):	80 × 173 × 144 mm
Weight:	690 g excluding battery pack and wireless controller

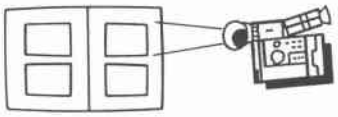
RF Unit RU-100

European model		**Australian model**	
Power source:	5 V DC	Power source:	5 V DC
Power consumption:	40 mA (max.)	Power consumption:	35 mA (max.)
RF output:	30-39 selectable	RF output:	0 CH/1 CH selectable
Dimensions (W×D×H)	75×30.4×51 mm	Dimensions (W×D×H):	75×34.5×51 mm
Weight:	200 g	Weight:	150 g

- Zoom ratio changes slightly depending on the distance between the lens and the object. Indicated zoom ratio is based on infinity setting.

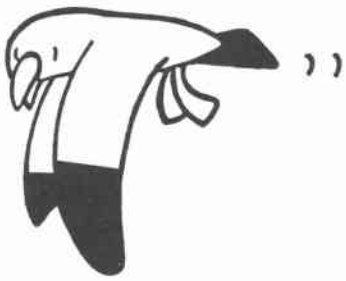
Weight and dimensions are approximate. Errors and omissions excepted.
Subject to change without notice.

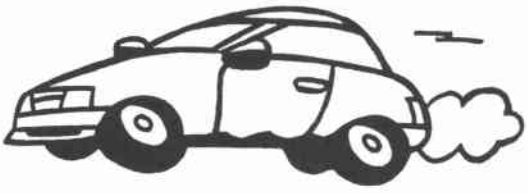
Creating an Animated Title



By alternately displaying the first and second pages of the titles, a simple two-frame animation effect can be achieved.

Record the illustrations so that the border lines do not appear inside the viewfinder.





Canon

CANON INC. 7-1, Nishi-Shinjuku 2-Chome, Shinjuku-ku, Tokyo 163, Japan
Mailing address: P.O. Box 5050, Dai-ichi Seimei Building, Tokyo 163, Japan

Canon Europa N.V.
P.O. Box 2262, 1180 EG Amstelveen, The Netherlands
Canon UK Ltd.
Units 4, 5 & 6, Brent Trading Centre, North Circular Road, London NW10 0JF, United Kingdom
Canon Australia Pty. Ltd.
1 Thomas Holt Drive, North Ryde, N.S.W. 2113, Australia
Canon New Zealand Ltd.
Fred Thomas Drive, Takapuna, P.O. Box 33-336, Auckland, New Zealand
Canon Singapore Pte. Ltd.
#13-01/15 Pidemco Centre, Singapore 0105
Canon Hongkong Trading Co., Ltd.
10/F Mirror Tower, 61 Mody Road, Tsimshatsui East, Kowloon, Hong Kong
Canon Latin America, Inc.
DEPTO DE VENTAS Apartado 7022, Panamá 5, República de Panamá
CENTRO DE SERVICIO Y REPARACION Apartado 2019, Zona Libre de Colón, República de Panamá

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